

MARINE REVIEW.

VOL. XVII.

CLEVELAND, O., MARCH 24, 1898.

No. 12

Lake Freight Matters.

Sixty cents from the head of Lake Superior, 55 cents from Marquette and 45 cents from Escanaba is the range of season lake freights on which ore shippers are now working. Quite a large amount of tonnage has been placed at the 60-cent rate, and one block of 60,000 tons to be moved throughout the season from Escanaba to Lake Erie ports has just been covered at 45 cents. Most of the vessel owners who are not connected with ore companies are very positive in saying that they will not accept these rates, preferring to take chances throughout the season, but shippers have found no difficulty in securing vessels for all ore that they have had to offer thus far at 60 cents from the head of the lakes. It is quite evident, however, that they are not confident of being able to cover at these rates all ore on which season freight contracts may be desired, as it is certain that a very large part of the lake fleet would be running at a loss on such figures.

The committee from the Lake Carriers' Association that went to Buffalo, Wednesday, with a view to assisting, if possible, in a settlement of difficulties existing between W. J. Conners and the elevator managers, were given such information as would enable them to fully understand the situation, but they took no action, as there was really nothing for them to do in view of the contract which the vessel owners have entered into with Mr. Conners. It is quite probable that if there is to be a fight over the grain shoveling business at Buffalo, and provision must be made for the work independent of the elevators, the arrangement will be such as to make the shoveling charge to vessels not in the association higher than the charge that is made to vessels of the association.

More New Freighters.

Two or three orders for new freight steamers are already closed or about to be closed by lake ship builders, but the details cannot be given out for a few days. The Cleveland Ship Building Co. has closed a contract with Robert R. Knodes of Cleveland for a steamer that will enter the service of the "Soo" line in connection with the package-freighters Minneapolis and St. Paul, built last winter at South Chicago, and which are also managed by Mr. Rhodes. This vessel will be Welland canal size and practically a duplicate of the Minneapolis and St. Paul. Her dimensions will be 252 feet over all, 238 feet keel, 42 feet beam and 26 feet depth. Engines will be triple expansion, supplied with steam from a cylindrical boiler of 14 feet diameter.

The Dry Dock Engine Works of Detroit is evidently in close touch with negotiations for these new vessels, as it is announced that they have two more orders for Howden draft equipment, one of which is for the Rhodes boat. The management of the Detroit works informs the Review that they are in receipt of a communication from Messrs. James Howden & Co. of Glasgow, date of March 7, giving the total number of installations of this draft throughout the world as 724, aggregating 1,830,100 horse power.

Mr. H. W. Ashley, general manager of the Ann Arbor Railroad & Steamship Lines, Toledo, tells the Review that there is no certainty as yet regarding the construction during the present year of the car ferry for which his company is having plans prepared. It is well known, however, that the business of the Ann Arbor company with the car ferries which they now have on Lake Michigan has been very heavy of late.

Congress is in Earnest about the Navy.

Five new dry docks, three battleships, six torpedo boats and six torpedo boat destroyers, as well as a naval vessel costing \$260,000, without armament, to take the place of the old Michigan on the lakes, are all provided for in the naval appropriation bill as presented to house of representatives. The bill also provides for an increase of 1,500 enlisted men for the navy. Other leading items are: Reserve supply of ammunition, \$500,000; modern battery for the Chicago, \$50,000; smokeless powder, \$250,000; reserve guns for auxiliary cruisers, \$250,000; smokeless powder factory, \$93,727; reserve torpedoes and appliances, \$250,000; arming and equipping naval militia, \$60,000.

If this measure passes muster in the two houses of congress during the next two weeks, there will be no cause for complaint as to our naval policy. The battleships are to cost \$3,000,000 each, exclusive of armor and armament, and the torpedo boats and destroyers are to cost \$150,000 and \$250,000 respectively. The bill also provides that the maximum price for armor plate shall be \$400 a ton. Three of the dry docks are to be on the Atlantic coast, at Portsmouth, Boston and League island; one on the gulf, at Algiers, near New Orleans, and one on the Pacific coast, at Mare island, near San Francisco.

At the works of the Newport News Ship Building & Dry Dock Co. today (Thursday) the battleships Kearsarge and Kentucky will be launched in the presence of a distinguished assembly, including the governors of Virginia and Kentucky and their staffs, as well as large delegations from Washington, New York and the state of Kentucky. These vessels were illustrated and fully described in the Review of the 17th inst.

Vacancies in local steamboat inspection boards around the lakes are gradually being filled. Capt. Thomas Honnor, last year in the steamer Wisconsin, has been appointed inspector of hulls in the Grand Haven district, and Jeremiah Collins, chief engineer of the steamer L. C. Waldo, takes the position of assistant inspector of boilers at Milwaukee.

King & Steele of Duluth have bought the Toledo tug E. P. Ferry.

Acid vs. Basic Steel.

Some time ago the Marine Review printed a large number of letters from bridge builders, ship builders and steel experts dealing with the relative merits of basic and acid open-hearth steel for the construction of ships. The subject is again under discussion. Acid open-hearth steel has been specified for the new East River bridge, New York, and the manufacturers of the basic open-hearth article are defending their product. That part of the discussion pertaining to steel for ships will interest ship builders and ship owners. It is claimed that while there are a number of prominent engineers who, a few years ago, were in doubt on the subject, today they consider basic open-hearth as acceptable a product as acid. One series of tests which is thought to have caused the change of opinion was made by the navy department.

The navy department, about a year ago, made an investigation of the quality of the hull material furnished for the five battleships now under construction. A large portion of this material was made by the basic open-hearth process. The balance was made by the acid open-hearth process. In making this investigation the department selected plates at random, and from these plates were taken samples which were tested, a series being taken from each battleship separately. The specification under which the material was ordered and made required a minimum tensile strength of 60,000 pounds and a minimum elongation longitudinally of 25 per cent. in 8 inches. The following is a summary of the average results of the tests for each vessel:

Battleships	BASIC OPEN-HEARTH STEEL.		ACID STEEL.	
	Ultimate strength. Pounds.	Elongation in 8 inches. Per cent.	Ultimate strength. Pounds.	Elongation in 8 inches. Per cent.
Kentucky and Kearsarge.....	64,880	27.6	64,810	26.2
Illinois	64,290	27.7	64,190	25.5
Alabama	65,364	25.96	65,962	24.8
Grand average	64,870	27.08	64,870	25.5
Wisconsin	58,480	27.1	58,540	25.7

Referring to the foregoing summary of tests, one of the manufacturers of basic open-hearth steel says: "It will be observed that the average of the basic open-hearth steel showed a very uniform product throughout, and that it came exactly within the limits of the specification under which it was furnished; while the average results of the acid open-hearth steel were lower than the minimum required, which should result in a corresponding increase in elongation. The basic steel, although having a tensile strength 6,000 pounds higher than that made by the acid process, gave exactly as good an elongation, which is a clear indication, and was so taken by the government, that at least in this investigation the basic steel was the better article."

Still there are several leading ship builders who prefer the acid open-hearth product. In a magazine article of recent date Mr. Lewis Nixon discusses tests of ship material required by Lloyds and by the United States navy. "Steel must be open-hearth," he says, "but there is no requirement that it shall be by the basic or acid process. However, it is now the general opinion that acid open-hearth steel is the more reliable."

A commission recently named by Gov. Black of New York to investigate the expenditure of the \$9,000,000 canal appropriation began its work a few days ago. Members of the commission are George Clinton of Buffalo; Smith W. Weed of Plattsburg; Darwin R. James of Brooklyn; Franklin Edison, formerly mayor of New York; Frank Brainard, president of the New York Produce Exchange; A. Foster Higgins, chairman of the harbor committee of the New York Chamber of Commerce, and Wm. McEchron of Glen Falls. All members of the commission are well-known business men, and the membership is about equally divided between Republicans and Democrats. Notwithstanding the disturbance that was raised when it was found that \$7,000,000 additional would be required to complete the canal improvements under present plans, it would seem that the people of the state will be asked, at the next general election, to authorize the issuance of more bonds, as the commercial bodies of New York city have endorsed a bill with that end in view, which is now before the state assembly. These same commercial organizations seem to oppose any movement towards turning the Erie canal over to the general government.

The Iron Trade Review Co. of Cleveland has purchased the Industrial World of Chicago. For some time past the Cleveland journal has maintained an editorial and business office in Chicago and has made considerable progress in the field that was occupied by the Industrial World. The Chicago journal will now be discontinued and the field more thoroughly covered by the Iron Trade Review, the management of which has of late been especially progressive.

The new Bessemer (Carnegie) railway, Conneaut to Pittsburg, will not be in shape to handle coal to any great extent during the coming season, but it is quite probable that this road will cut an important figure in the soft coal trade of the lakes next year.

Passenger agents of railways in all of the lake cities have decided to give half-fare tickets to sailors going to their ships. Applications for these tickets must be made by the owners.

A Port Colborne dispatch says there will no doubt be 14 feet of water in the Welland canal on the opening of navigation.

The America, for Chicago-Michigan City Service.

The small steamer America, building at the works of the Detroit Dry Dock Co. for Messrs. Dunbar & McMillan, will certainly build up a profitable passenger and freight patronage between Michigan City and Chicago. She will be just the kind of vessel required for this short run. In regular service she will make full 16 miles an hour, and when necessary she may be pushed to 17½ miles. The steel hull of this vessel is 154 feet keel length, 165 feet over all, 27 feet beam and 13 feet moulded depth. The width of beam over guards will be 31 feet. Engines will be triple expansion, with cylinders 15, 24 and 38 inches diameter by 24 inches stroke. Two cylindrical boilers will each be 10 feet diameter by 10 feet 2 inches length, built to withstand 165 pounds working pressure and fitted with Howden hot draft appliances. The vessel's cabins will be finished in hard wood, and the passenger entrance will be through a social hall on the main deck after the style of entrance in the big paddle steamers of the Detroit & Cleveland and Cleveland & Buffalo lines.

Mr. Carnegie's Ship Yard Suggestion.

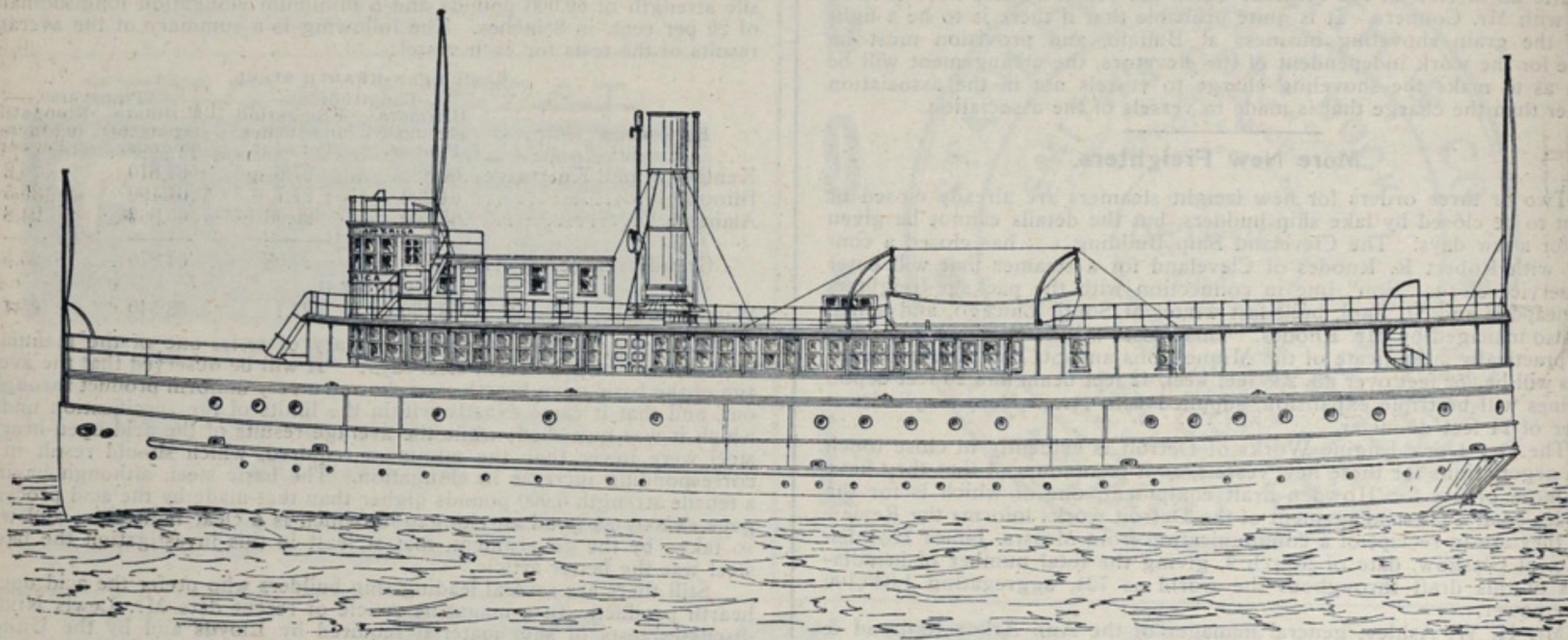
Mr. Irving M. Scott, vice-president and general manager of the Union Iron Works, San Francisco, writes the Marine Review as follows regarding Mr. Andrew Carnegie's idea of a big ship yard in New York harbor:

"In a broad, national spirit I heartily endorse the views of Mr. Carnegie, which, as a rule, are strong and sound on most of the questions in regard to which he expresses himself. His description of the conditions existing around New York harbor we cannot gainsay. The duty of the American ship builder will never be ended until our shipping obtains the carrying trade of our own products, and the energies of the people utilize the conditions described. The same thing holds absolutely

Engineering Publications.

Marine engineers in all parts of the world are acquainted with the advantages of Morison suspension furnaces and Fox corrugated furnaces, as well as the Morison patent furnace front and door, for the manufacture and sale of which the Continental Iron Works of New York holds sole right. The great value of these furnaces has given them a world-wide reputation in marine service. The Continental works is now promoting, more extensively than in the past, the adoption of the Morison suspension furnaces, with accompanying patent furnace fronts and doors, for internal fired boilers in stationary service. Economy of space and favorable results from the standpoint of efficiency are important items in electric light plants, central power stations, etc., and in public buildings, office buildings and other places where space is limited. These features, developed in marine service, are becoming more important each year in stationary practice, and the Continental works has therefore issued another catalogue devoted to their specialties in internal furnace tubular boilers. It is an elegant specimen of printing and lithography. There are numerous designs of boilers of the internal furnace type, together with exhaustive notes pertaining to the work of designing them, forms of specification, etc. Lists of boilers of this kind used in other than marine service are also furnished, together with testimonials from heads of waterworks departments in leading cities, managers of gas and electric works, electric light and power companies, etc.

Spon & Chamberlain, 12 Cortlandt street, New York, have favored the Review with copies of two record books designed to be of special value to marine engineers. In the first book, by Bryan C. Bartley, items of detail to the number of probably 1,000, regarding engines, boilers, auxiliary machinery, etc., of some twenty steamers, may be set down opposite printed headings and in connection with an elaborate index, in such a way that any part of the data may afterward be picked out without



STEAMER AMERICA, BUILDING AT DETROIT, FOR MICHIGAN CITY-CHICAGO SERVICE.

true of the Pacific coast, and the undeveloped resources in her foothills, ore capable of making the best steel, the power in the mountain streams which with electric devices can generate ample power for manufacturing purposes, the wonderful productiveness of the soil, enabling this coast to feed cheaply large numbers of men, and the absolute necessity of developing domestic manufacturing industries to employ the young and able-bodied men of our community, all require, as the highest duty of the statesman and citizen, that every effort be made towards realizing this end. The results would employ the unemployed, develop the industries, aid manufacturers, strengthen us by exploiting local reservoirs of great use, add to the wealth and power of the nation, and be beneficial to everyone.

"I also endorse what Mr. Carnegie says in regard to the energy of the west in the development of ship building, and believe that every patriotic citizen should bend his energies toward making this country of America supreme, not only upon the land but upon the sea."

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, March 19, 1898:

	Wheat, bushels.	Corn, bushels.
Chicago	7,796,000	17,049,000
Duluth	3,020,000	3,084,000
Milwaukee	113,000	123,000
Detroit	109,000	17,000
Toledo	223,000	897,000
Buffalo	648,000	756,000
	11,909,000	21,926,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 343,000 bushels of wheat and an increase of 88,000 bushels of corn. On the same date there was afloat at Chicago 1,693,000 bushels of wheat, 7,920,000 bushels of corn, 232,000 bushels of oats, 198,000 bushels of rye and 93,000 bushels of barley; at Buffalo 386,000 bushels of wheat; and at Milwaukee 1,509,000 bushels of corn and 316,000 bushels of oats.

a minute's delay; and yet the book, neatly and durably bound in flexible leather, is little larger than pocket size. It will prove especially valuable to constructing engineers. It sells for \$2. The second book, by P. A. Low, is for records of valve settings. The tabulated arrangement of the various items that would be noted by a progressive working engineer in setting valves are well arranged in this book. It sells at 60 cents.

"Lubricants, Oils and Greases," by I. I. Redwood, member of the Society of Chemical Industry (England), is the title of another small engineering work published by Spon & Chamberlain. Mr. Redwood is also the author of "Theoretical and Practical Ammonia Refrigeration" and "A Practical Treatise on Mineral Oils and their By-Products." In dealing with the subject of this work his aim has been to give engineers an insight to the properties of various lubricants that are likely to be offered them, and thus enable them to guard against the choice of one that would be likely to prove unsatisfactory for the purpose for which it is intended. He also explains, as concisely as possible, to those desiring information regarding the manufacture of lubricants—and greases in special—the theory and general requirements that govern their manufacture.

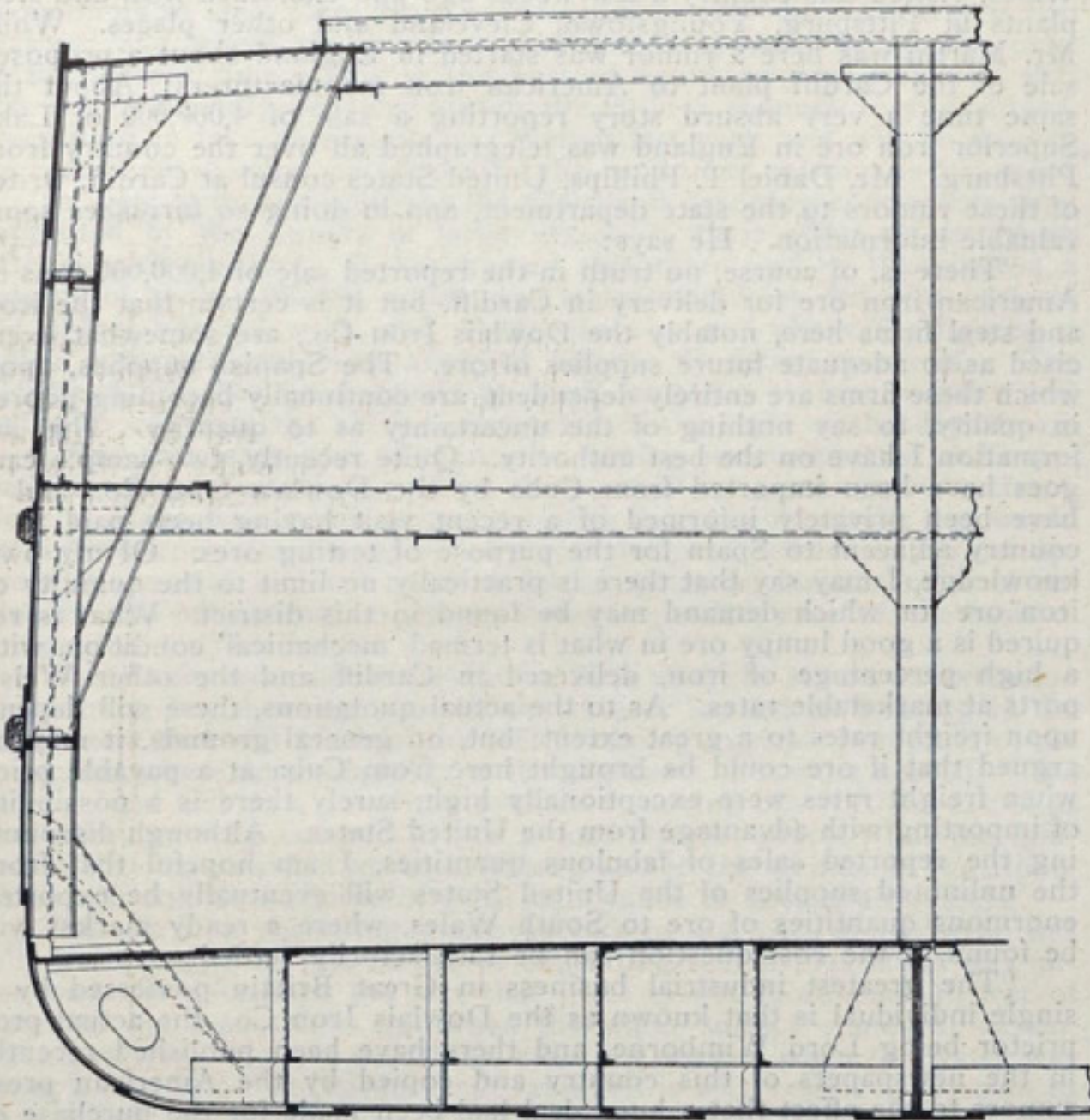
Horace See, naval architect of No. 1 Broadway, New York, is very proud of the performance of the tug El Toro, which is owned by the Southern Pacific Co. and operated in New York harbor. This tug—90 feet long over all and 19 feet beam—was built by the Newport News Ship Building & Dry Dock Co. in 1891. She has a See triple expansion engine, which can be started, it is said, from a state of rest of long duration without difficulty and made to run at full speed as quickly as any of the lower types. The performance of the El Toro for the year ended Dec. 31, 1897, as reported in a circular from Mr. See, is as follows: Steamships towed from company's piers to Erie Basin, 62; steamships towed from piers No. 34 and 37 to 25, 115; steamships docked at piers No. 34 and 37, 133; lighters towed and moored, 1,056; miles run without tow, 5,112; days in commission, 342; coal consumed per day, 139-100 of a ton; full pressure of steam kept on the boiler for entire 24 hours; boiler opened but three times during the year. When not engaged in towing, the boat is on fire duty.

J. T. Rose of Rose & Lazier, Duluth, has been appointed western agent at Duluth for the new Canada-Atlantic lake and rail company.

Wing Quarter Stanchion.

Editor Marine Review:—I will be thankful to you for space in your valuable paper for insertion of the enclosed drawing. It is a cross section of the modern type of steel bulk freight vessel. The only new feature I wish to introduce is the wing quarter stanchion for bulk freight vessels of excessive length of beam. This wing stanchion may be of any approved form, but the channel bar section is no doubt the most suitable, and may be 20 per cent. less in weight than the center pillar stanchion. The system of quarter stanchions fitted to the beam in way of web frames not only shortens the span of the beams and helps support the added weight of beam, tie plate and beam intercostals, but forms a rolling truss and support where most needed.

I would be glad to approve the adoption of this method on all bulk freight vessels whose length of beam is 47 feet and where no main deck



is laid; and I would be glad to hear from any of our lake vessel owners or builders who are building, or about to build, vessels of this description, either for or against this method of supporting decks of excessive area. I would like to have them point out the disadvantage, if any, that I may have overlooked.

F. D. HERRIMAN.

Office of Surveyor-General, Great Lakes Register,
Chicago, March 17, 1898.

Wages for 1898.

Ex-President J. J. H. Brown and Secretary C. H. Keep of the Lake Carriers' Association, together with Mr. A. B. Wolvin of Duluth and C. W. Elphicke of Chicago, attended the meeting of the executive committee of the association in Cleveland Tuesday, called to fix salaries of officers for 1898 and also to arrange a schedule of wages for employees aboard all vessels of the association. It was agreed that salaries of officers of the association should in all cases be the same as they were a year ago. It was also agreed to open the season of 1898 with wages in all cases the same as they were a year ago. The full schedule is as follows:

ON STEAM VESSELS.

Wages per month.

	First class.	Second class.	Third class.
Chief engineer	\$105	\$90	\$60 to 75
Second engineer	70	65	50
First mates	75	65	50 to 60
Second mates	50	40
Cooks	50	45	40
Helpers to cooks.....	15	12
Firemen	30	30	25 to 30
Wheelmen	30	30	25 to 30
Lookouts	30	30	25 to 30
Deck hands	15	15	15
Oilers	30

ON CONSORTS AND SAILING VESSELS.

First mates	\$45	\$30 to 40
Second mates	35
Cooks	30	25
Seamen	30	20 to 25

Note.—Firemen engaged in fitting out vessels are to be paid \$1.25 per day.

Two or three members of the committee favored wages somewhat higher than those of a year ago. They expressed the opinion that men may be scarce in some lines, when business opens up fully in the spring, and that an advantage might be gained by paying higher wages at the outset, with a view to attracting labor to the lakes. The reduction of 5 to 10 cents a ton in season ore contracts was against such action, however, and it was voted down.

In the division of classes, the first class on steamers is supposed to represent all steel freighters excepting the older ones that have only compound engines; these latter are included in the second class with the

larger wooden steamers. The third class is designed to cover small wooden steamers, such as are engaged in lumber trade. The point of tonnage where a line is to be drawn between first and second class in barges and sailing vessels is left to the owner, and in fact it may be said that this is also true to a great extent with the steamers, but it is probable that the demand for labor this spring will be such as to not draw the line on classes as close as was the case a year ago.

A. R. Rumsey was re-elected chief shipping master, with Charles F. Wall as assistant, at Cleveland. Other shipping masters are: Buffalo, Wm. Fletcher; Ashtabula, Daniel Harrington; Toledo, Patrick Mitchell; Chicago, J. W. Hansen and Robert Anderson, assistant; South Chicago, Frank Brown; Milwaukee, Wm. Lennon.

Vacuum in Feet and Inches.

Editor Marine Review:—I notice in the Review of the 17th inst. an item regarding the Kaiser Wilhelm der Grosse and a visit paid to her by a party of engineers; they nearly went into hysterics over the fact that she actually had a number of pumps aboard and which were all of one make. Mr. Kearfott asks in agony: "What would our friends on the lakes think of 29 inches of vacuum all the time?" In order to help ease his evident suffering, I hasten to assure him that they, one and all, rise up and say, "Good t'ing!" Mr. K. has not forgotten that to sell pumps is the chief end of man, and a few inches of vacuum more or less cut no figure whatever. His anxiety as to what our opinion is does him credit. I am afraid some one was playing horse with the party. But it wasn't the pump man. No, never! Perish the thought! It was that fellow that is always around such places and his name is Nobody. To be sure, Mr. K. didn't say that they actually obtained such a vacuum; he only asked what we thought of it. Well, we are an unfortunate lot out here, and our wool does grow pretty long for a fact, and we are more or less under the necessity of using the primitive jet condenser, and we can't get over 25 or 25½ inches to save ourselves, so we look with awe upon the 29 inches as upon the unattainable. Now, why shouldn't we have some of those odd inches that are drifting around New York? I take it that it's pumps we want, my boy, pumps, and lots of them! And while we are at it why not put in twice as many and get 60 inches. It would be just as easy. Of course, I know that many people have taught that with a surface condenser a much better vacuum could be obtained—sometimes, when conditions were unusually favorable, reaching perhaps 28 inches with a high barometer—but they are wrong, all dead wrong. It's pumps. And then, the vacuum gauge—it never lies. How can it? Sometimes it does up here on the lakes. I have known it to have the face to show 27 inches, but then, everything on the lakes lies, but never in New York.

I want to thank Mr. K. for his kind message and the disinterested thoughtfulness which prompted it. And just to think of that 10 per cent. we have been losing all these years! I hope the people in the Perry-Payne building won't catch on. How they would go out into the court and call high heaven to witness that if they had only known of this no cut would have been made in the engineer's wages last summer. But now it is all too late, and they will have to cut him again because he didn't tell them of it. Oh, Kearfott! come to us and let us look upon your 29-inch countenance, and we will get 10 per cent. more power for the same money, or we will get the same power for 10 per cent. less money, and we can carry ore so much cheaper, and we will all be happy once more. And you won't have to work a minute. All you will have to do will be to sit in a great, big, beautiful office and just beg us to keep cool, take our turn and not be in such a hurry, and the Kearfott Unlimited Vacuum & Pump Co. will flourish like a green bay horse. And perchance it may happen that, through the universal use of your pumps, and their exhaustiveness, so to speak, and their pumping so much wind that the atmosphere may get packed so much harder that it will boost the barometer up a few inches further, and it will no longer be necessary to hesitate at 29 when describing their "suckativeness." It must have been a great banquet.

ENGINEER.

Oshkosh, March 21, 1898.

Growing Importance of the Light-House Service.

Employees of the United States light-house establishment, exclusive of naval officers detailed for the service, number 4,295, and there are 8,632 aids to navigation of all kinds maintained throughout the country without direct charge of any kind to the shipping interests. The service is far more extensive than that of any other nation, and is constantly growing in importance. On June 30, 1898, there were under the control of the United States light-house board the following named aids to navigation:

Light-houses and beacon lights, including twenty-one temporary lights in Mobile harbor.....	1,116
Light-vessels in position	42
Light-vessels for relief	5
Electric-lighted buoys in position.....	11
Gas-lighted buoys in position.....	30
Fog signals operated by steam, caloric or oil engines.....	149
Fog signals operated by clockwork.....	205
Post lights	1,779
Day or unlighted beacons.....	424
Whistling buoys in position.....	71
Bell buoys in position.....	112
Other buoys in position, including pile buoys and stakes in fifth district and buoys in Alaskan waters.....	4,710

In the construction, care and maintenance of these aids to navigation there were employed:

Steam tenders	28
Steam launches	11
Sailing tenders	2
Light-keepers	1,292
Other employees, including crews of light-ships and tenders.....	1,144
Laborers in charge of post lights.....	1,859

The number of gas-lighted buoys noted in the foregoing table is only thirty, but there are now on the lakes alone some forty of these buoys, a large number of which were placed on their stations since the date of this report, June 30, 1897.

Appointments of Captains and Engineers.

Montreal Transportation Co., Kingston, Ont.: Steamers—Glengarry, Capt. Gordon Kean; Engineer John Evans; Bannockburn, Capt. John Irving, Engineer R. Taylor; Rosemount, Capt. J. W. Mawdesley, Engineer H. Thurston; Active, Capt. Edward Bennett, Engineer John Hamilton; Bronson, Capt. Jos. Murray, Engineer R. Hepburn; Glide, Capt. Thos. Murphy, Engineer Geo. Tuttle; Jessie Hall, Capt. C. Martin, Engineer Alex. Barton; J. A. Walker, Capt. John Boyd, Engineer Geo. Boyd; D. G. Thomson, Capt. Jas. Murray, Engineer G. Henderson. Lake barges—Kildonan, Capt. Maxime Lefebvre; Minnedosa, Capt. R. C. Irwin; Selkirk, Capt. H. Colvin; Winnipeg, Capt. Jas. Kirkwood; Melrose, Capt. Jas. Fleming; Dunmore, Capt. John Phillips. River barges—Alberta, Capt. Frank Poirier; Acadia, Capt. Louis Hebert; Bella, Capt. Peter Lalonde; Cleveland, Capt. J. D. Perron; Chicago, Capt. Arsene Charlebois, Sr.; Colborne, Capt. Ben. Sauvie; Corn Crib, Capt. A. Charlebois, Jr.; Cornwall, Capt. H. Boyer; Detroit, Capt. Treffe Davust; Dorchester, Capt. Jules Lalonde; Eagle, Capt. A. Monnette, Jr.; Hector, Capt. Tim Hebert; Glengarry, Capt. Albert Major; Harvest, Capt. John Bradley, Jr.; Iowa, Capt. Jos. Davust; Jennie, Capt. Moise Moreau; John Gaskin, Capt. Theo. Leduc; Lancaster, Capt. Jos. Page; McCarthy, Capt. E. R. Roy; Montreal, Capt. M. Lefebvre; Maggie, Capt. A. Monnette; Nebraska, Capt. Celestia Leboeuf; Regina, Capt. Ovide Trudell; Senator, Capt. Alfred Lalonde; Star, Capt. E. Secotte; Toledo, Capt. Fred. Leduc; Toronto, Capt. A. Levoie; Wheat Bin, Capt. A. St. Marcelles; Cobourg, Capt. Frank Lafrance; Brighton, Capt. N. Mallette; Kingston, Capt. Alex. Hebert.

Bradley, M. A., Cleveland: Steamers—Aloa, Capt. M. Mulholland, Engineer J. N. Kirby; Geo. Stone, Capt. C. H. Francke, Engineer Edwin Black; Hesper, Capt. J. A. Holmes, Engineer A. R. Crook; Pasadena, Capt. L. Stough, Engineer J. H. Gilbo; Gladstone, Capt. Paul Howell, Engineer P. H. Doyle; M. B. Grover, Capt. W. E. Morris, Engineer G. F. Hunt; City of Cleveland, Capt. J. H. Wysom, Engineer Alonzo Smith; Henry Chisholm, Capt. P. H. Smith, Engineer C. W. Eaton; R. P. Ranney, Capt. C. H. Wallace, Engineer A. J. Millet; J. S. Fay, Capt. A. B. Keller, Engineer F. P. Fitzgerald; Fred. Kelley, Capt. Geo. Maloy, Engineer D. McMeneny; Superior, Capt. G. D. Tulian, Engineer —; S. E. Sheldon, Capt. H. F. Holmes, Engineer Guy Hemenger. Schooners—Adriatic, Capt. E. Saveland; John Martin, Capt. Jas. Lawless; D. P. Rhodes, Capt. John Bridge; Sandusky, Capt. A. B. Parsons; Thos. Quayle, Capt. Fred. Green; A. Cobb, Capt. N. Gifford; Negaunee, Capt. O. C. Olson; Southwest, Capt. Jas. Gibson.

Anchor Line, E. T. Evans, Mgr., Buffalo: Steamers—India, Capt. P. O'Neil, Engineer D. Donohue; China, Capt. Charles Christy, Engineer John Wise; Japan, Capt. John Doherty, Engineer William Wilson; Campbell, Capt. M. Rowan, Engineer George Stears; Alaska, Capt. E. Martin, Engineer George W. Towne; Wissahickon, Capt. J. McCarthy, Engineer Fred. Rehbaum; Delaware, Capt. J. H. McAvoy, Engineer Albert Edgar; Juniata, Capt. George Delaney, Engineer J. H. Forrester; Conestoga, Capt. H. Cronkhite, Engineer William Nolan; Lycoming, Capt. L. Wright, Engineer G. F. Foggett; Conemaugh, Capt. F. Bloom, Engineer W. A. Black; Lehigh, Capt. J. H. Berow, Engineer Timothy Griffin; Clarion, Capt. Charles Nelson, Engineer James Erskine; Susquehanna, Capt. A. McKenzie, Engineer George McLeod; Codorus, Capt. D. Ryder, Engineer W. J. Swain; Schuylkill, Capt. H. O. Miller, Engineer J. E. Jordan; Mahoning, Capt. J. Corcoran, Engineer C. J. Fox.

Millen, J. W., Detroit: Steamers—Iron King, Capt. Wm. F. Millen, Engineer John Hegemer; Iron Chief, Capt. W. A. Irvine, Engineer August Cobo; Iron Duke, Capt. N. L. Miner, Engineer Chris. Howard; Iron Age, Capt. John McAlpine, Engineer Wm. G. Beckbissinger. Schooners—Iron Queen, Capt. Gus. E. Atkinson; Iron Cliff, Capt. Martin Kurth; Iron State, Capt. W. W. Carter; Iron City, Capt. John Hurley.

Parker & Millen, Detroit: Passenger steamers—City of Toledo, Capt. —, Engineer Daniel Harkins; Greyhound, Capt. —, Engineer Robert Meddler. Wrecking steamers—Favorite, Capt. P. L. Millen, Engineer Geo. L. Simmons; Saginaw, Capt. Isaac Watt, Engineer —. Lake tugs—Balize, Capt. P. J. Canniff, Engineer Walter Harling; Onaping, Capt. J. F. Tobin, Engineer George Whitehead.

Wilson Transit Co., Cleveland: Steamers—Andrew Carnegie, Capt. W. W. Dawley, Engineer Fred. Harmon; W. D. Rees, Capt. Chas. A. Benham, Engineer Frank C. Stoeber; Yuma, Capt. Daniel Buie, Engineer John Skelly; Spokane, Capt. C. C. Touslev, Engineer James Derrig; Olympia, Capt. A. M. Shephard, Engineer W. F. Gregory; Yakima, Capt. Wm. A. Williams, Engineer James McGuirk; Sitka, Capt. Geo. W. Bryce, Engineer John Walsh; Wallula, Capt. Alex. Forbes, Engineer Henry Burton; C. Tower, Jr., Capt. Geo. W. Brock, Engineer Peter Lamar. Schooner—Yukon, Capt. Wm. Forbes; New schooner—Capt. James Higgins.

Northern Steamship Co., Buffalo: Steamers—North West, Capt. G. A. Minor, Engineer J. A. Cowier; North Land, Capt. Wesley G. Brown, Engineer R. S. Grant; Northern Light, Capt. M. J. Haberer, Engineer Frank Herringer; Northern Queen, Capt. J. F. Vauhn, Engineer A. T. Stewart; North Wind, Capt. Delos Waite, Engineer Thomas Jackman; Northern Wave, Capt. Martin Nilan, Engineer J. J. Darcy; North Star, Capt. William Thorne, Engineer W. T. Pike; Northern King, Capt. Jas. Saunders, Engineer John O'Hara.

Hawgood & Avery Transit Co., Cleveland: Steamers—S. S. Curry, Capt. Geo. Rowbarger, Engineer Geo. Smith; Geo. F. Williams, Capt. Thomas Ellis, Engineer R. B. Buchman; Servia, Capt. Fred. Ahlstrom, Engineer Richard Mahoney. Schooners—Hawgood, Capt. D. D. Gordon; Moravia, Capt. A. C. Hansen; Ewen, Capt. Fred. Watson.

Parker, A. A., Detroit: Steamers—A. A. Parker, Capt. J. T. Hutton, Engineer P. H. Canton; John Oades, Capt. Timese Lemay, Engineer Harry Merrill; John Pridgeon, Jr., Capt. D. N. Sherwood, Engineer John Mogan; B. W. Blanchard, Capt. Thos. Meikleham, Engineer John Bloome. Schooners—B. W. Parker, Capt. Edward Lohr; Red Wing, Capt. Charles Anderson; San Diego, Capt. John Mason; Saveland, Capt. Henry Morey.

Blodgett, O. W., Bay City, Mich.: Steamer—C. H. Bradley, Capt. James Bennett, Engineer Geo. M. Hopkins. Schooners—Mary Woolson, Capt. Wallace Allan; Brightie, Capt. F. H. Lennon; Peshtigo, Capt.

L. D. Bennett; Goshawk, Capt. M. Nagle; B. W. Jenness, Capt. Thomas Turner.

Sharp, W. H., Bay City, Mich.: Steamer—J. P. Donaldson, Capt. Julius Ward, Engineer A. J. Wilcox. Schooner—A. W. Wright, Capt. James Bennett.

Buckley, Edward, Manistee, Mich.: Steamer—Edward Buckley, Capt. Chas. Gnewuth, Engineer Richard Winkler.

Stewart Transportation Co., Detroit: Steamer—C. F. Bielman, Capt. Fred. Stewart, Engineer Robert Lacey.

Fairgrieve & Co., J. B., Hamilton, Ont.: Steamer—Arabian, Capt. Oliver Patenaude, Engineer Alex. H. Bertram.

American Iron Ore for South Wales.

Mr. E. P. Martin, general manager of the Dowlais Iron Co., Cardiff, Wales, visited this country a few weeks ago and examined iron and steel plants at Pittsburg, Youngstown, Cleveland and other places. While Mr. Martin was here a rumor was started in England about a proposed sale of the Cardiff plant to American iron manufacturers. About the same time a very absurd story reporting a sale of 4,000,000 of Lake Superior iron ore in England was telegraphed all over the country from Pittsburg. Mr. Daniel T. Phillips, United States consul at Cardiff, writes of these rumors to the state department, and in doing so furnishes some valuable information. He says:

"There is, of course, no truth in the reported sale of 4,000,000 tons of American iron ore for delivery in Cardiff, but it is certain that the iron and steel firms here, notably the Dowlais Iron Co., are somewhat exercised as to adequate future supplies of ore. The Spanish supplies, upon which these firms are entirely dependent, are continually becoming poorer in quality, to say nothing of the uncertainty as to quantity. This information I have on the best authority. Quite recently, two sample cargoes have been imported from Cuba by the Dowlais Iron Co., and I have been privately informed of a recent visit having been paid to a country adjacent to Spain for the purpose of testing ores. Of my own knowledge, I may say that there is practically no limit to the quantity of iron ore for which demand may be found in this district. What is required is a good lumpy ore in what is termed 'mechanical' condition, with a high percentage of iron, delivered in Cardiff and the other Welsh ports at marketable rates. As to the actual quotations, these will depend upon freight rates to a great extent; but, on general grounds, it may be argued that if ore could be brought here from Cuba at a payable price when freight rates were exceptionally high, surely there is a possibility of importing with advantage from the United States. Although discounting the reported sales of fabulous quantities, I am hopeful that from the unlimited supplies of the United States will eventually be exported enormous quantities of ore to South Wales, where a ready market will be found, if the cost question can be satisfactorily settled.

"The greatest industrial business in Great Britain possessed by a single individual is that known as the Dowlais Iron Co., the actual proprietor being Lord Wimborne, and there have been published recently in the newspapers of this country and copied by the American press rumors to the effect that a huge deal had been made for the purchase of the entire concern by an American syndicate. A great deal of excitement resulted locally, and this was fanned by writers in the press who evidently drew upon their imaginations for their facts. The operations of the Dowlais Iron Co. are conducted in the Cardiff district, Cardiff itself being the locale of its newest steel works, and the importance of a change in the ownership may be gauged when I state that the total value of the iron, steel and colliery works is computed to exceed \$25,000,000. An instance is hereby afforded of the popular idea in this country of the almost limitless extent of American enterprise, and of the enormous increase of output which is anticipated as the result of introducing American methods of manufacture. Until some time last year the affairs of the Dowlais Iron Co. had been completely controlled for many years by a distinguished man, who has just died (Mr. G. T. Clark), under whose guidance the works were very largely developed and steered with remarkable financial success. No trustee has been appointed in his stead, and it is very probable that, rather than continue to bear alone the great responsibility of so huge a business, which is and always has been left to the control of others, Lord Wimborne would naturally feel inclined to follow the custom of the country in transferring the responsibility to a limited-liability company. At the time the rumor of American purchase was first started, Mr. E. P. Martin, the general manager of the Dowlais Iron Co.'s business, was on his way to the United States; and, when this became known, it seemed to lend color to the idea that his object in going was to enter into negotiations for the sale. A good deal of matter appeared in the newspapers which, on the face of it, was mere guesswork on the part of ill-informed writers, and the fact that no confirmation appears to be forthcoming goes far to show that, as far as an American syndicate is concerned, the idea is unfounded."

Around the Lakes.

Bids for the use of a steam vessel and small boats required for the Detroit river mail service will be opened by Postmaster Dickerson of Detroit on the 25th inst.

The small steam vessel building at the works of the Craigs, Toledo, for the supervision of government harbor work at Buffalo, will be named Gen. John M. Wilson, out of compliment to the chief of army engineers.

Capt. Boutell of Bay City has given special attention to alterations made in the lake tug Sweepstakes during the past winter, and has fitted her out in steam-yacht style. She has stockless anchors of the Tyzack type.

Harrison C. Pearsons, who was for a great number of years engaged in ship building at Ferrysburg, Mich., and who was inspector of hulls in the Grand Haven district during the Grant administration, died at his home in Ferrysburg on Saturday last.

H. J. McCarthy, chief steward of the Goodrich Transportation Co., Chicago, has made the following appointments of stewards: Steamers—Georgie, W. J. Reardon; City of Racine, G. Watson; India, E. Hobart; Iowa, H. Coston; Atlanta, C. McKaig; Sheboygan, T. Healy; Chicago, A. Beaubian.

ANOTHER MILLION FOR DREDGING.

BALANCE OF 20-FOOT CHANNEL FUNDS TO BE EXPENDED—UNSATISFACTORY CONDITIONS IN LOWER PART OF THE DETROIT RIVER.

When contracts for the several sections of the 20 and 21-foot ship-canal between Duluth, Chicago and Buffalo were let in 1894, the firm of L. P. & J. A. Smith of Cleveland was awarded that part of the work known as section 8, at the mouth of the Detroit river. Upon completion of their section of the work last fall, the Cleveland firm sought an extension of contract to include a large amount of dredging between Bar point light-ship and Ballard's reef. This would include the stretch of Canadian channel between Bois Blanc island and Amherstburg, and on up the river through the Lime-Kilns crossing—just the part of the Detroit river where groundings of steel ships have occurred repeatedly during the past two seasons, and where the greatest obstructions to deep navigation exist at the present time. This is the part of connecting lake channels that was not sufficiently provided for in the 20-foot channel appropriations. Deep draft in lake navigation was limited last year, and will be delayed for some time to come, on account of the conditions existing at this point.

In view of these conditions the Cleveland dredging contractors were supported by the owners of large vessels in their effort to secure an extension of contract. It was known that there was in Washington a balance of about \$950,000, which was appropriated for different parts of the 20-foot channel work, and which was over and above the figures at which contracts had been accepted by the dredging concerns. The Cleveland firm has been quietly at work for three or four months past trying to convince the chief of engineers of the right of the department to expend this large sum of money on further improvements, and especially the improvements for which they sought an extension of contract. General Alger, who is fully acquainted with the valuable results that would be derived from cleaning up shoal places not provided for in regular appropriations, was inclined to favor the proposition, but the chief of engineers held out against the money being expended, even on the basis of competitive bids for further work.

The Smiths were not successful in their effort to secure an extension of contract, but their agitation of the subject has led to a ruling in the department that will admit of the \$950,000 being expended on parts of the ship-canal where, in the opinion of the engineers, it is most needed. This surplus fund will go a great way towards removing obstructions at points that were not fully covered in the 20-foot channel project, but the difficulties that have existed at Amherstburg and in the vicinity of the Lime-Kilns will still be a source of great annoyance to deep-draft vessels.

The situation regarding improvements in this part of the river was fully discussed while this matter of expending the surplus funds was under way. It developed the fact that there is not more than 18 feet of water in the Lime-Kilns cut when the water surface stands at datum. But there were frequent occasions, even last season, when the water was about a foot below the datum stage, and this is why vessels are known to have struck in the cut when drawing only 17 feet. When this cut was completed in 1890, it was announced that the depth, at the stage of water on which the engineers base their calculations, was full 20 feet. Now it is admitted by the engineers that the depth, according to the same stage of water, is only 18 feet. This great difference in the depth of the channel as announced in 1890 and as found after examination last spring, has been a subject of considerable comment among vessel men. The only explanation given is that boulders have found their way into the channel. The depth would have been even less last season but for the removal in the spring of a large number of rocks having less than 18 feet (datum stage) over them.

Since this question of additional improvements under the 20-foot channel scheme has been brought up in the war department, attention has been directed especially to the unsatisfactory condition of channels in the immediate vicinity of the Lime-Kilns, as it is admitted that little advantage is to be derived from deep water elsewhere in the rivers as long as shoal spots remain in these channels. Some of the correspondence of the war department on the subject has been submitted to representatives of the shipping interests in congress. One letter from Col. Lydecker of Detroit to the chief of engineers, Gen. John M. Wilson, is especially interesting, as it was written since the close of navigation last season and goes into details regarding all of the channels from Ballard's reef down to Lake Erie. Col. Lydecker is of the opinion that a 20-foot channel of 600 feet least width, from a point just below the lower end of Bois Blanc island to and through the Lime-Kilns crossing, eliminating abrupt bends and providing all that is requisite for safe navigation could be provided for \$500,000. His summary of the present condition of this part of the river will be read with interest by vessel masters. It may be well to note at the outset that all depths pertain to the stage of water that has been taken as datum for local improvements, which is about one foot above the average stage of the 1897 season of navigation. Col. Lydecker says:

"The total length of channels from Ballard's reef to the foot of section 8 of the 20 and 21-foot ship-canal (which is well out into Lake Erie) is 56,000 feet, or about 10.6 miles, comprising (1) Ballard's reef channel, 11,850 feet long; (2) Lime-Kiln crossing, 2,600 feet; (3) Bois Blanc island, upper range, 1,700 feet; (4) Amherstburg reach, 7,050 feet; (5) Hackett range, 13,000 feet; and (6) Bar point shoals, 19,800 feet. This sub-division marks primarily the six different sailing courses that must be successively followed by deep-draft vessels, but it also corresponds with the changing physical conditions in the different sections; these conditions are summarized below because of their controlling influence in the matter of improvements.

"Ballard's reef.—Before this section of the Detroit river was carefully examined in 1893, it was not believed that much work would be required to obtain a wide channel there with a navigable depth of 20 feet; the charts indicated a general depth greater than that, for a channel-width of from 1,000 to 3,000 feet, except at a few scattering points. But the examination of 1893 showed that the whole area was studded with boulders reaching in many places to within 18½ feet of the water surface, and in

the progress of subsequent improvements it has been found that the clear depth in most of this channel does not exceed 18 feet; bed rock with only 17.3 feet of water over the highest point has been removed at several points, and there is no doubt that it will be found at many others. The project of improvement adopted in 1893 was to clear the channel to a navigable depth of 20 feet for a width of 400 feet on each side of the central range-line, thereby making the full width of cleared channel 800 feet. Work thus far done has been confined to widths of 300 feet on the west and 150 feet on the east side of the central range, and has resulted in making a channel 450 feet wide in which the general depth is 20 feet, but there still remain a number of spots within the limits of this 450-foot channel where the depth does not exceed 18 feet. Operations have to be carried on with a comparatively small plant in order that the vast passing commerce be not too much obstructed; the result is that progress is slow, and this, combined with the scattering and scraping character of the work, makes the unit of cost of improvements here a maximum.

"Lime-Kiln crossing.—This is an artificial channel cut through a ledge of lime-stone rock; the work was completed in 1890, to a depth of 20 and width of 440 feet. The channel was examined last spring, when it was found that the depth had become reduced by boulders or rocks having been moved into the cut; such as had less than 18 feet of water over them were removed, and that may now be taken as the least present depth in this section.

"Bois Blanc range.—In this short reach the general depth is 20 feet or over, and the least known depth in a channel about 600 feet wide is 18½ feet. The abrupt changes of course where this reach connects with those adjoining it constitute the chief danger to navigation here.

"Amherstburg reach.—This reach occupies the narrow section of river included between Bois Blanc island and the main Canadian shore; the general depth of water through it is 20 feet or more, but scattering boulders reduce the navigable depth to 18 feet; so far as known the least width of channel in which that depth obtains is about 450 feet. The improvement of this section so as to give a channel 600 feet wide with a navigable depth of 20 feet, would bring the edges of the channel quite close to natural shore lines at some points. The material to be removed would be principally sand and clay with some gravel, loose stone and boulders, but it is probable that some bed rock might be encountered in the removal of what is known as the New York shoal, which projects into the channel from the east side.

"Hackett range.—On this range the general depth is over 20 feet, and but little is required to make a channel of that navigable depth 600 feet wide. The principal work would be in removing the Boston shoal, which is composed of clay, loose stone, or boulders, and projects into the west side of the channel near its upper end. For a distance of about 5,000 feet from the upper end the least depth now known, in a channel about 500 feet wide, is 19 feet; the remainder of this range constitutes a part of section 8 of the 20 and 21-foot channel, and it has been cleared of obstructions to the prescribed grade of that section.

"Bar point shoals.—The work of dredging this section to a navigable depth of 20 feet has recently been completed, the width of cleared channel being 800 feet. This channel and the lower 8,000 feet in length of the Hackett range section combine to form what was originally designated as section 8 of the 20 and 21-foot channel. The width of cleared channel in section 8 is 800 feet for a distance of about 27,500 feet northward from the Detroit river light-house, and 600 feet for the remaining distance of about 1,000 feet, this reduced width having resulted from protest filed by Canadian property owners in that locality against further dredging on the east side of the channel.

"From the foregoing it is seen that section 8 of the ship-canal has been improved to a width of 800 feet for a length of about 27,500 feet, and for a further length of 1,000 feet the width of improved channel is 600 feet; the total length of channel to be improved under the contract for this section, to a width of 800 feet, was but 26,500 feet; the extension through the length of 1,000 feet, with width of 600 feet, brings the channel to a point beyond which that width is about all that can be obtained without conflict with Canadian property owners, or an expenditure that would be incommensurate with benefits to navigation. An improved channel with a width of 600 feet from the upper end of section 8 of the ship-canal to and through the Lime-Kiln crossing would eliminate abrupt bends and provide, in this sheltered reach, all that is requisite for safe navigation.

"I regret that I am not now able to present a detailed estimate of cost attaching to such improvement, but from data now available it would probably be about \$500,000; the cost of making the channel 800 feet wide would probably approximate \$1,500,000, and in either event the work would be wholly in Canadian waters. Extensive surveys have been made during the progress of work in this locality, and as soon as results can be plotted and reduced I will be able to submit more precise estimates, but it is now my opinion and recommendation that we should not undertake at present to make the width of improved channel between the head of section 8 and foot of Ballard's reef greater than 600 feet."

Trade Notes.

Capt. H. Warwick was in Cleveland last week on his return from a trip around the lakes in the interest of H. H. Baker & Co., Buffalo.

Fire department officials of Chicago have asked for bids on the new fire boat designed by Mr. W. J. Wood, naval architect with the Goodrich Transportation Co.

The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, of New York, are to complete for L. D. Fiske of Hartford, Conn., a twin-screw naphtha yacht of large dimensions within sixty days of the time of signing contract. The yacht is to be 64 feet over all, 11 feet beam and 3 feet draught, and is to be elegantly finished throughout. She will have twin naphtha engines of 12 horse power each.

The Lake Shore Chemical & Oil Co., 72 Wood street, Cleveland, is calling attention of vessels owners and marine engineers to a boiler compound that is giving general satisfaction in stationary work. A chief engineer of a large fleet who knows something of its ingredients has given a favorable opinion of it. The company also manufactures a disinfectant that is valuable for passenger steamers.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

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binders sent, post paid, \$1.00. Advertising rates on application.

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The books of the United States treasury department on June 30, 1897, contained the names of 3,230 vessels, of 1,410,102.60 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1897, was 399, and their aggregate gross tonnage 769,366.68; the number of vessels of this class owned in all other parts of the country on the same date was 314, and their tonnage 685,709.07, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1897, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,775	977,235.45
Sailing vessels and barges.....	1,094	394,888.87
Canal boats	361	37,978.28
Total	3,230	1,410,102.60

The gross registered tonnage of the vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1893.....	175	99,271.24
" " " " 1894.....	106	41,984.61
" " " " 1895.....	93	36,352.70
" " " " 1896.....	117	108,782.88
" " " " 1897.....	120	116,936.98
Total	611	403,327.91

ST. MARY'S FALLS AND SUZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canals.			Suez Canal.		
	1897	1896	1895	1897	1896	1895
Number of vessel passages.....	17,171	18,615	17,956	2,986	3,409	3,434
Tonnage, net registered.....	17,619,933	17,249,418	16,806,781	7,899,374	8,560,284	8,448,383
Days of navigation.....	234	232	231	365	365	365

One item in the sundry civil appropriation bill, now before the United States senate, is of special importance to lake interests. It is the item providing funds for buoyage service under the direction of the light-house board. Lake vessel owners have asked that \$100,000 of these funds be set aside for the purchase of gas buoys, of which there are now some forty in use on the lakes and which are especially adapted to the lighting of connecting rivers and the numerous shoals that are found in all parts of the lakes. Every effort is being made by Senators McMillan and Hanna to have this amendment incorporated in the sundry civil bill in the senate and also to provide an appropriation for two light-house tenders that will be suited to caring for the lake buoys. If money is provided for the light-house tenders, they will be constructed for ice-crushing service, so as to be capable of handling buoys early in the spring and late in the fall, thus reaping full advantage from the lights when they are most needed. Buoys to be purchased from the appropriation of \$100,000 will be divided with Atlantic and Gulf coast districts, but it is expected that about fifty of them will be assigned to the lakes, thus providing for all points where they are now needed. There is no longer any question regarding the merits of this system of lighting lake channels. Nothing so satisfactory to the vessel interests has ever before been tried on the lakes. The constant and rapid extension of the use of Pintsch buoys by the European governments, as well as our own, speaks louder than their success on the lakes in telling of their superior value as aids to navigation. The number of them in use by different governments throughout the world now aggregates 800.

New Orleans and Albany are the names selected for the cruisers Amazonas and Abrenall, which the Elswicks of England have been building for Brazil, and which have been recently added to the United States navy by purchase. The Abrenall will not be completed until fall, but the Amazonas is completed and will be brought to the United States immediately. The Amazonas is slightly larger than the Cincinnati, being of 3,450 tons displacement. She is known as a steel protected cruiser and is copper sheathed. She is 330 feet in length, 43 feet 9 inches beam and has a draft of 16 feet 10 inches. Her indicated horse power under forced draft is 7,500, which will drive her at a speed of 20 knots. Her coal-carrying capacity is fixed at 700 tons, which gives her a steaming radius of 7,000 knots. Her battery consists of six 6-inch breech-loading rifles, four 4.7-inch rapid-firing guns, ten 6-pounders, eight 1-pounders, three machine guns, two 3-inch landing guns and three torpedo tubes. Four of her 1-pounders are Maxim automatic rapid-firers and the remaining four are Nordenfeldts. Four of the 6-inch guns are arranged in pairs in barbets, forward and aft, and the other two are placed one on each beam. The beam guns can be swung through an arc of 120 degrees, which enables a fire of four 6-inch guns either ahead or astern.

Many things may happen to disturb the symmetry of a launch. There have been instances where a vessel, launched with a number of people on board, capsized because of neglect to provide proper ballast, or recklessly imperfect calculations as to her initial stability, causing a great loss of life. In view of such possibilities, the crowning moments of a ship builder's career are those, when by reason of the perfect adjustment of every mechanical appliance, accurate calculation of every mathematical factor and the perfect execution of every manual detail, a large ship glides noiselessly down the slope on her ways, like a thing of life, and takes to her destined element on a perfectly even keel with a graceful dip of her bow

to an admiring audience, and then floats with the tide as if serene in the majesty of a graceful debut.—Lewis Nixon.

The first of the 1898 series of "Notices to Mariners" from the hydrographic office is dated March 1, and is an important pamphlet, which should be secured by all vessel masters. It contains several pages of reliable information regarding draught of water at various ports around the lakes, collected mainly from government engineers. Three books now published by the hydrographic office provide revised sailing directions for all the lakes and connecting waters, as well as the St. Lawrence river and Gulf of St. Lawrence. The division of this information is indicated by titles of the books, which are: "Sailing Directions for the Great Lakes and Connecting Waters," "Sailing Directions for North Channel of Lake Huron and Georgian Bay," "Sailing Directions for the Gulf and River St. Lawrence."

Buffalo's new blast furnace plant, building on the old Union Iron Works tract, Buffalo river, is said to be planned on a scale that will make it the most modern furnace for foundry iron in the country. This is the enterprise undertaken by Frank B. Baird. There is deep water up to the works, and it is said that contracts are about to be let for the construction of an ore dock 500 feet long and of about 65 feet average width, on which there will be installed hoisting apparatus capable of handling 200 tons of ore per hour.

It is officially announced that the Ohio Steel Co. of Youngstown is to build two furnaces and that the Johnson company of Lorain has arranged the finances for putting up a by-product coke oven plant and two blast furnaces capable of together producing 1,000 tons per day. This time Mr. Moxam of the Johnson company is directly quoted in the announcement regarding the improvements at the Lorain works, which have been so long talked of.

Geo. L. Norton of the Marine Journal is always found defending the shipping interests against ignorance of the daily press in the east regarding maritime affairs. He enters into these matters to the extent of taking them up by correspondence with the heads of newspapers, and recently succeeded in straightening out, in this way, a part of the nonsense that was printed regarding the passing of the French liner La Champagne, when disabled, by other vessels.

It is announced from Halifax that the graving dock at that port, which the United States government was forced to use some time ago, when it became necessary to dock the battleship Indiana, is to be enlarged so as to take in the largest ships that float. If Canada, with its meager shipping interests, can afford such undertakings, it would certainly seem that there is room for the increase in dry dock facilities now proposed in this country.

W. J. Davidson & Co. of Port Richmond, N. J., will make repairs at once amounting to \$16,100 on the light-house tender Laurel, and if appropriations are not secured next week for one or two new tenders for the lakes, it is more than probable that the Laurel will be brought to the lakes, probably in June, and assigned temporarily to service in the eleventh district, with headquarters at Detroit.

Mr. Burton of Cleveland has introduced in the house of representatives a concurrent resolution providing for the printing of 10,000 copies of the statistical report of Mr. G. G. Tunell of Chicago on lake commerce. This report is known as house document No. 277. Four thousand copies of the report, according to the resolution, are to be for the use of the treasury department.

Chicago drainage canal construction on Jan. 1, according to the annual report of Chief Engineer Randolph, covered 95.4 per cent. of the whole work. The total expenditure for engineering and construction from the inception of the work amounts to \$19,247,289.

The announcement that the Carnegie Steel Co. has sold a little over 5,000 tons of deck plates to a ship building concern on the Clyde is the best kind of an indication of low cost of ship material in this country.

Measured by the values of exports and imports—not quantity—the commerce of Liverpool and that of London are about on a par, each figuring up to about \$1,000,000,000 a year.

After many elaborate inquiries it is announced from Lloyds that the gross tonnage of the British mercantile marine is now over 13,000,000.

A Ship of Unequal Sides.

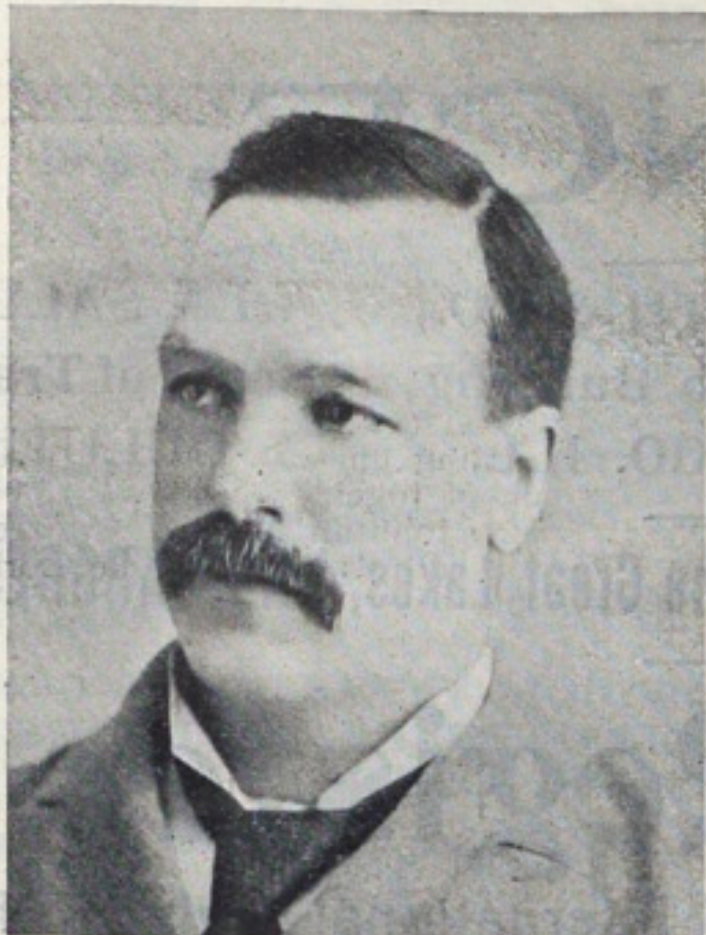
In a magazine article of recent date (Cassier's) Lewis Nixon writes in a popular strain about the construction of a ship. Referring to the work of laying down the lines of a vessel in the mould loft, he tells of instances where, through lack of accuracy in measurements, ships have been built with unequal sides. "One of these," he says, "was the old American twenty-four-gun corvette John Adams, built in New England towards the end of the last century. She was well built and staunch so far as workmanship and material were concerned, but in consequence of the slovenly manner in which her lines were laid down and checked off, she had about 6 inches more beam on one side of the middle line of the keel than on the other, which made her so lop-sided that her ballast had to be unequally stowed in order to trim her on even keel, and she would sail much faster and hold way much closer to the wind on one tack than on the other. However, such errors are practically impossible now in consequence of improved methods and the multiplication of devices for discovering and checking error."

Charts of the lakes made by the British admiralty; charts made by the United States hydrographic office, navy department, and charts made by the engineer corps of the United States army are all kept in stock by the Marine Review, 409 Perry-Payne building. All of them are corrected to date, and prices represent simply the cost of paper and press work.

New General Superintendent at the "Soo."

Assistant United States Engineer Joseph Ripley, who has just been appointed general superintendent of St. Mary's Falls ship-canal at Sault Ste. Marie, Mich., is eminently well qualified for the position, which carries with it the general supervision of all the important government river and harbor work in that district. Mr. Ripley succeeds Mr. E. S. Wheeler, who last summer was appointed engineer on the Nicaragua canal commission, and who, at the conclusion of his service with that commission, may resume the canal superintendency, although this is considered not probable.

Mr. Ripley has been in the employ of the government at the "Soo" since 1877, when he was appointed inspector of masonry on the Weitzel lock, which position he held until that work was completed in 1881. Mr.



Ripley's rare capability early asserted itself, and since 1881 he has been in active charge of the extensive channel improvements on St. Mary's river, which included the construction of the new Hay Lake channel and the subsequent deepening and widening of nearly the entire stream, a work of considerable magnitude. That this work has been well done is testified to by every mariner engaged in the lake traffic. Those who know of Mr. Ripley's intimate knowledge of the tortuous St. Mary's river say that there is no portion of its 65 miles of whirling eddies, swift currents and treacherous bottom that he is not as familiar with as a man is with the interior arrangement of his home. And this is true, every word of it. This knowledge, gained by years of experience, combined with executive ability of a high order, peculiarly equips Mr. Ripley for the position to which he has been appointed.

Mr. Ripley returned to the "Soo" last month from Birmingham, Ala., where he had charge of the government preliminary survey and preparation of estimates for the proposed ship-canal to connect Birmingham with the Tombigbee river. This work was undertaken last summer and was accomplished with remarkable expedition and in the thorough manner characteristic of everything Mr. Ripley undertakes.

Joseph Ripley was born at Pontiac, Mich., in 1854, and graduated from the high school there in 1870. He took a three-years' course at Ann Arbor in civil engineering, graduating in 1874. He has been a resident of Sault Ste. Marie since 1876.

Ship Masters' Directory, 1898.

This publication shows considerable improvement over previous issues. It contains nearly 300 pages, and in addition to the list of names and addresses of members, there is included a great deal of information valuable to ship masters. The revised "Soo" river rules and the pilot rules and information about masters' licenses are new features. The lists of vessels' and owners' names will prove valuable to patrons. It is no doubt pleasing to the association to note that the advertising patronage has kept pace with these improvements. Grand Financial Secretary Collier in his annual letter in the directory calls attention to the fact that one of the most important fleets on the lakes is sailed exclusively by members of the association. Whether this is intentional or not on the part of the management, it is a high compliment to the organization that in securing some twenty of the best captains on the lakes it was not necessary to go outside of this body. The book will be ready for distribution (to advertisers and members only) about April 1.

Importing deck composition in order to get a good article is unnecessary, according to the following statement by Capt. Crosby of the Coroner: "When fitting out the schooner yacht Coroner, October, 1895, for our cruise with a scientific expedition to Japan, I used 600 pounds of Dr. Cole's elastic white seam composition in the deck seams of the yacht. I found that the temperature of the different zones, which the yacht sailed through, had no deleterious effect on the composition, but on the contrary, it proved to be so elastic that it yielded to the swelling and shrinking of the deck planks without cracking, proving that the composition has all the merits that is claimed for it. I cheerfully recommend all owners and masters of yachts, etc., to use elastic seam paint and the composition." These articles are manufactured by Cole & Kuhls, foot of Twenty-fourth street, Brooklyn, N. Y.

"Friction and Lubrication" is the title of one of the latest pamphlets issued by the Joseph Dixon Crucible Co. of Jersey City, N. J. It is brim full of information—everything boiled down—on the subject indicated by the title. The Dixon company sends samples of graphite on application.

Labor-Saving Machinery in Ship Yards.

It is admitted, both by English and American ship builders, that in the employment of labor-saving machinery the ship yards of this country, and especially those of the lakes, are very much in advance of British ship yards. Plates and sections entering into the construction of ships in nearly all of the ship yards of this country are lifted into position by machinery suspended from structures of various designs that span the building berths, and in many cases these structures support riveting machines when at work. It would seem that the British builders are about to give more attention than in the past to this method of reducing cost of construction. A traveling gantry recently erected at the works of Harland & Wolff, Belfast, is probably the biggest thing of its kind in existence. It was designed especially for the building of the 700-foot White Star liner Oceanic, now in course of construction.

The clear height of this structure from the rail level to the under side of the cross-girders is 98 feet, and the clear space between the vertical legs is 95 feet. These dimensions will not only admit the largest vessel now building, but they provide for the future requirements for a long period. The lifting is done mainly by the four jib cranes situated respectively at the four corners of the structure. Each of them is capable of lifting 4 tons through a height of 80 feet, at a rake of 40 feet. It swings through an angle of 180 degrees, and can thus cover a space of about 80 feet at each side of the center line of the ship. The hydraulic cylinders and valves for each crane are placed on the corresponding leg of the gantry near the ground, steel wire ropes passing over guide pulleys controlling the several motions for lifting, racking and slewing. There are three hydraulic traveling cranes on the cross-girders, two being on the upper boom and one on the lower, to enable them to work very closely together. These cranes are controlled by hand from the level at which the machines are worked. They are manoeuvred by means of chains depending from sprocket wheels, and the great length of these chains is found to be no disadvantage, but rather the contrary. These cranes are generally used for supporting portable riveting machines, which are carried upon hydraulic lifts suspended from the traveling carriages of the cranes by chains of flat steel links, so arranged that the links can easily be put in or taken out according to the height at which the machines are being worked. The entire gantry runs on double rails laid down on both sides of the berth. These rails consist on each side of a pair of strong steel H-section bars, with flat steel bars riveted upon the upper surface. The two H-sections are braced together by cross-pieces, and are bedded upon continuous blocks of concrete carried on piles; the total length of the rails is about 650 feet, and the double rails are 100 feet apart, center to center. As the berth is on an incline of gradually increasing declivity, it was decided to lay the rail path to a vertical curve of very large radius. This avoids the use of high embankments or deep cuttings. It, of course, causes the gantry to be inclined slightly out of the vertical to one side at one end of its travel, and slightly to the other side at the opposite end, but this variation is of no practical importance, and does not interfere with the proper working of the cranes. The gantry is propelled along the double rails by two hydraulic engines, actuating worm gear upon the traveling wheels. These engines are of the three-cylinder single-acting type, with externally hemp-packed rams, all parts being easily accessible. There is one engine at each side, but these are connected together by vertical and horizontal shafts, carried up the legs and along the main girders. These shafts insure that the two sides of the gantry shall advance equally, and work very satisfactorily. As each side has its own engine, there is very little power transmitted through the shafts.

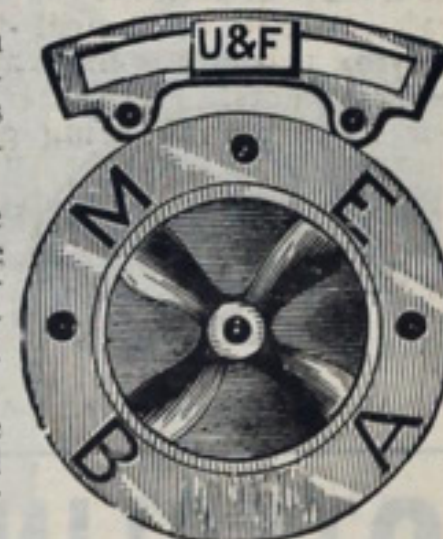
The gantry is entirely of steel and is securely braced together. At the four corners the girders are plated to increase the stiffness. Hydraulic pressure and return piping is carried up each of the four legs and across the top of the gantry, suitable branch pieces and hydrants being provided where necessary for use, coupling to riveting machines in whatever positions they may be required, and pressure is taken from an hydraulic main running along the end of the berth, the connection being made by large flexible armored hose. The exhaust water is also returned to the pump station through suitable mains, so that the same water is used over and over again. Rivet-heating furnaces have been placed at different levels on each side of the gantry, in such positions as will enable the machines to be readily supplied with rivets at any part of the ship. Staging and ladders are fitted to enable all parts of the gantry and machinery to be easily accessible for examination. There is also in course of construction, for work in conjunction with the gantry, a powerful hydraulic portable punch, capable of punching 1¼-inch holes in plates 1½ inches thick. This machine will be used for punching the plates in the top strakes of the ship, the plates being fixed against others which have been previously drilled or punched, the portable machine using the latter as a template, thus insuring exact fairing of holes.

Resolutions on the Death of James Spears.

Marine Engineers' Beneficial Association No. 2 of Cleveland gives expression to feelings of respect for a deceased brother, James Spears, in the adoption of the following resolutions:

Resolved, that in the death of our late brother and associate, James Spears, we have sustained a loss by the removal from our midst of one who was in every respect worthy of our esteem and confidence; and be it further

Resolved, that we forward a copy of these resolutions to the family of the deceased brother, and have the same spread upon our minutes.



Nash Bros. & Co., Ogdensburg, N. Y., write the Review as follows: "Please discontinue liner exchange No. 426, as we have sold the engines through this advertisement." This department of the Review is free to advertisers and subscribers.

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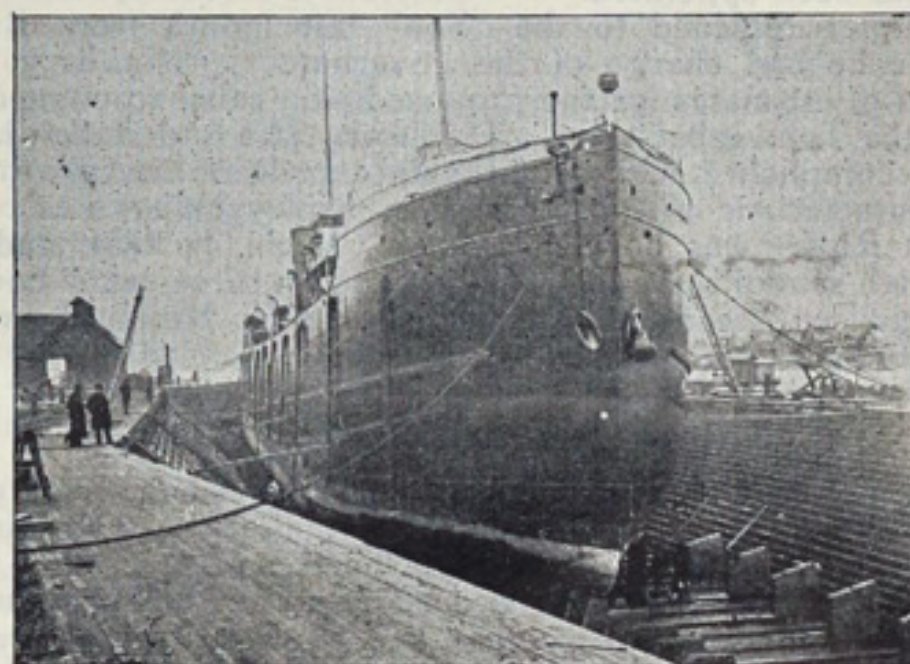


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Breadth, Bottom.....52 "	Depth over Sills.....18 "

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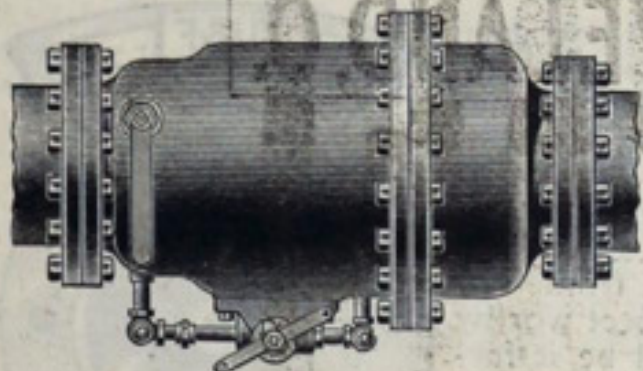
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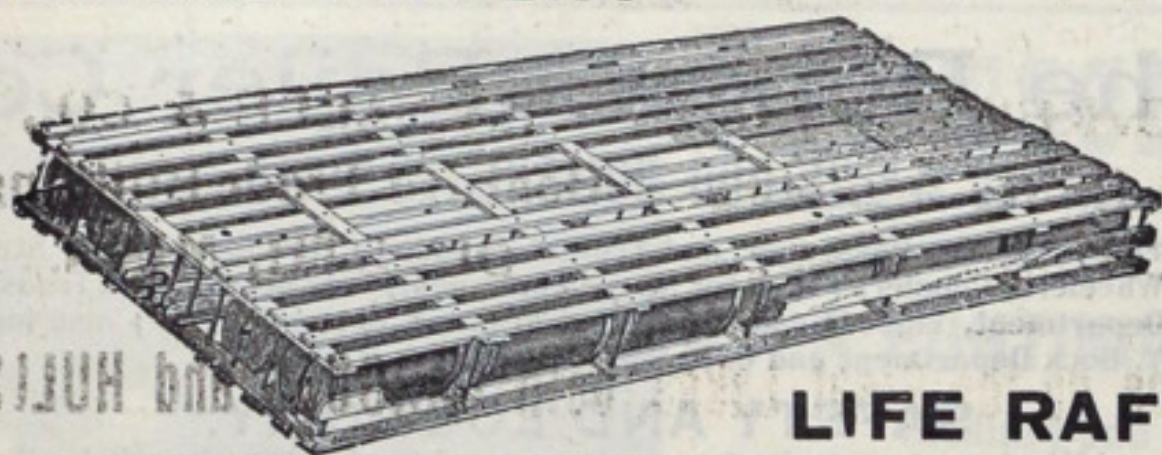
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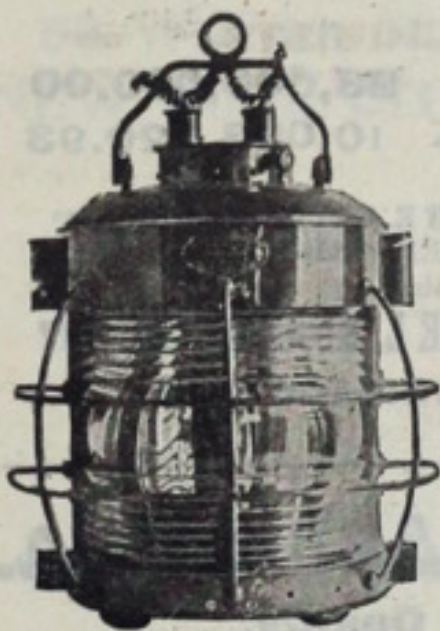
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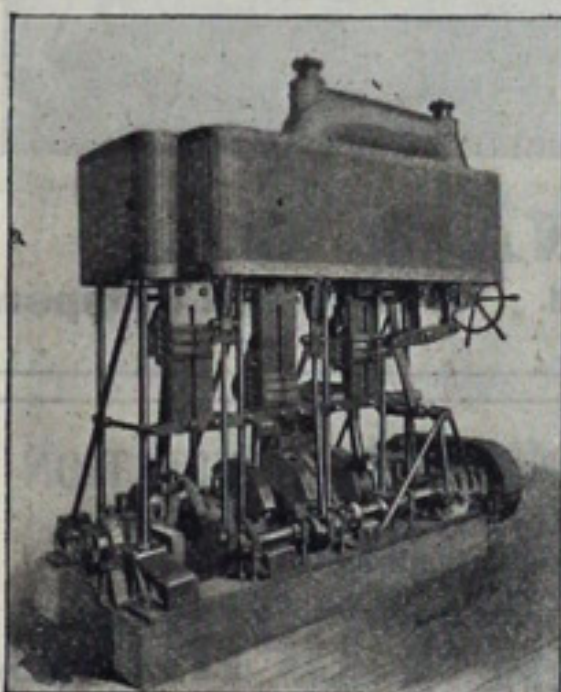
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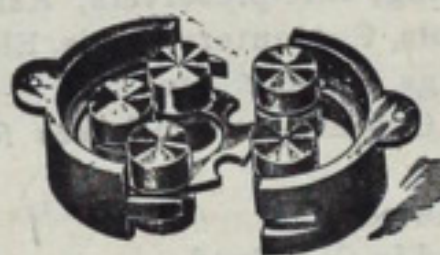
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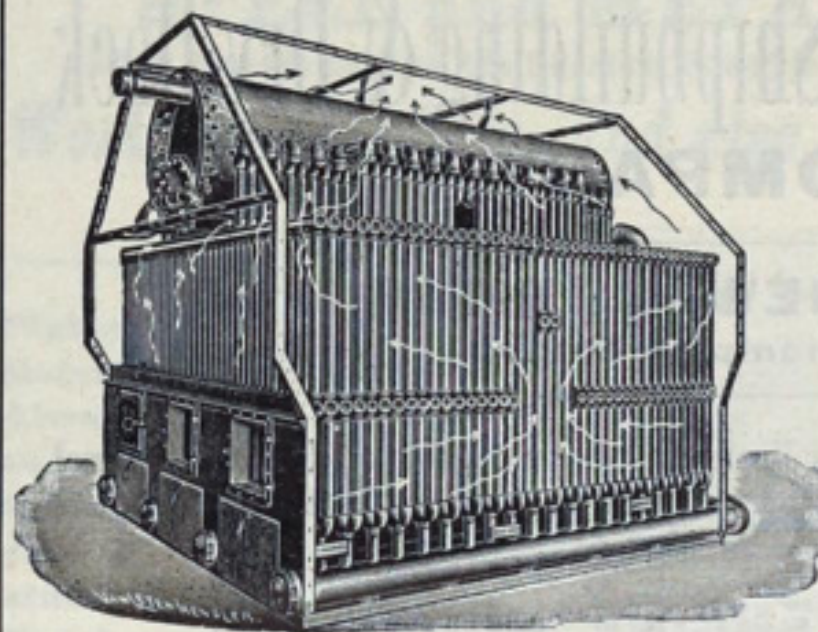
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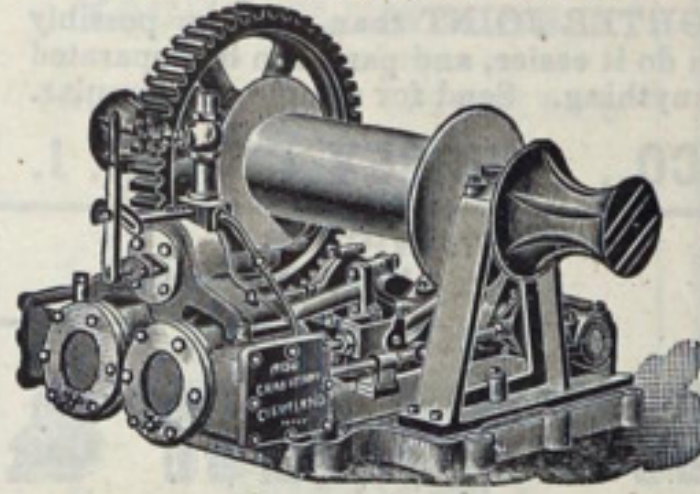
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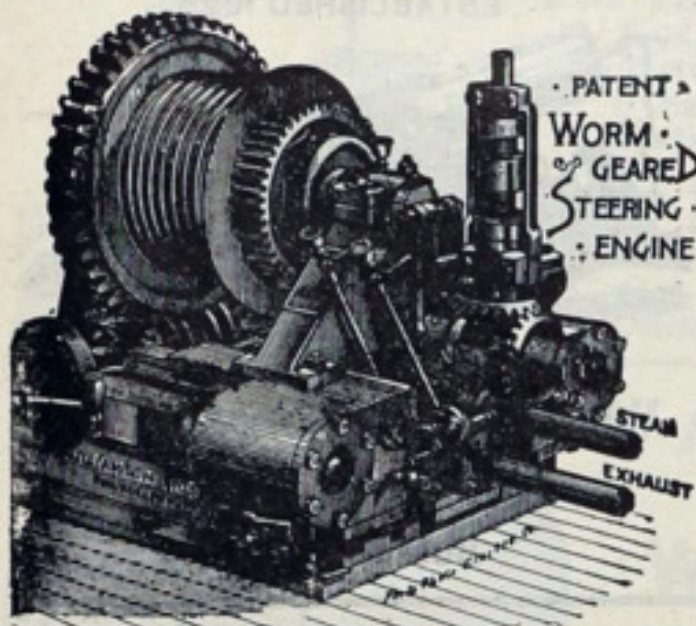
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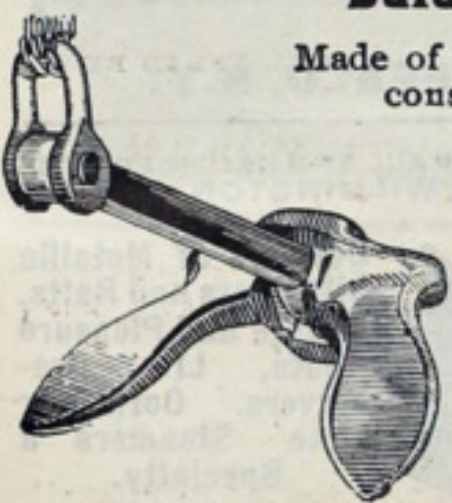
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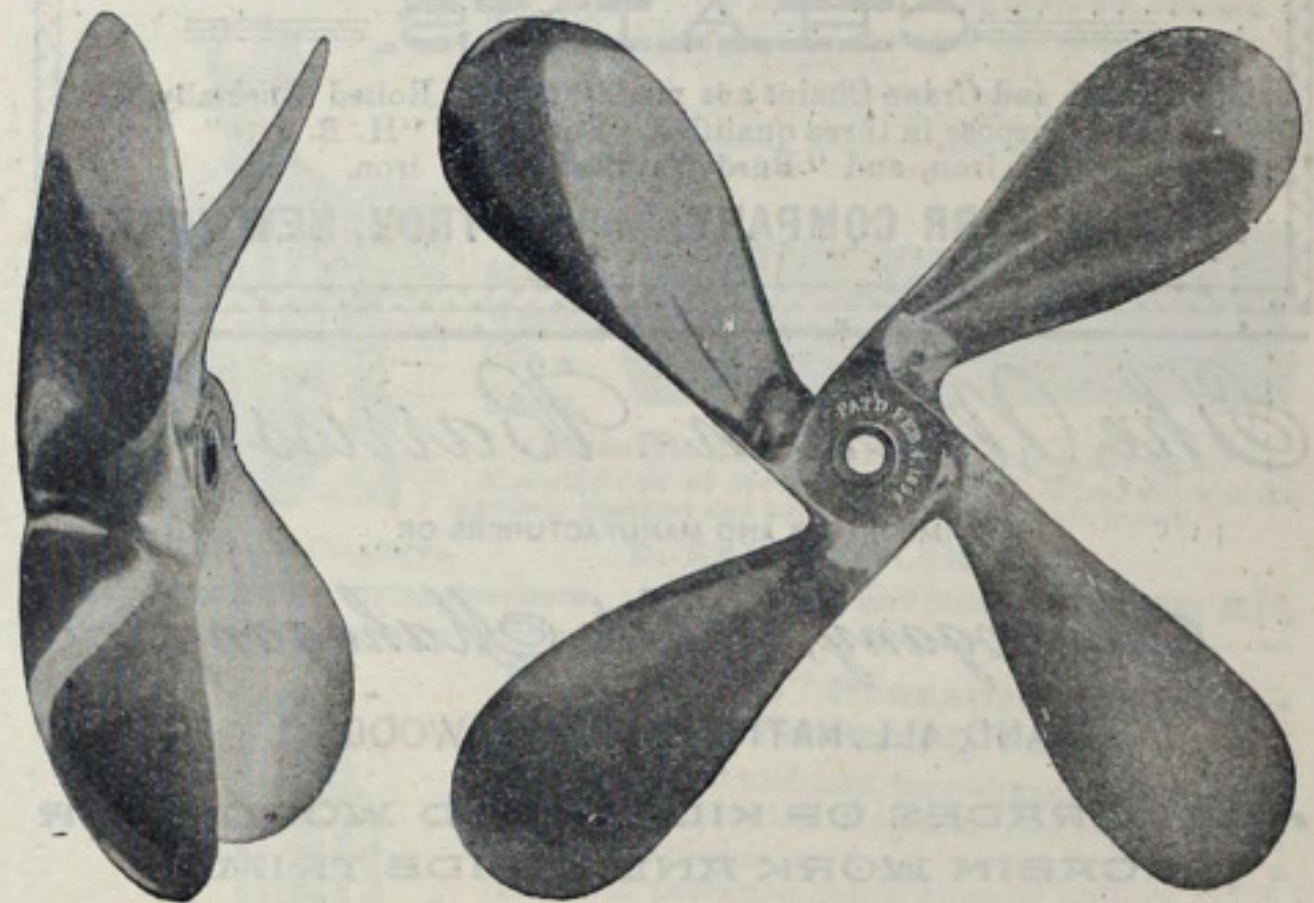
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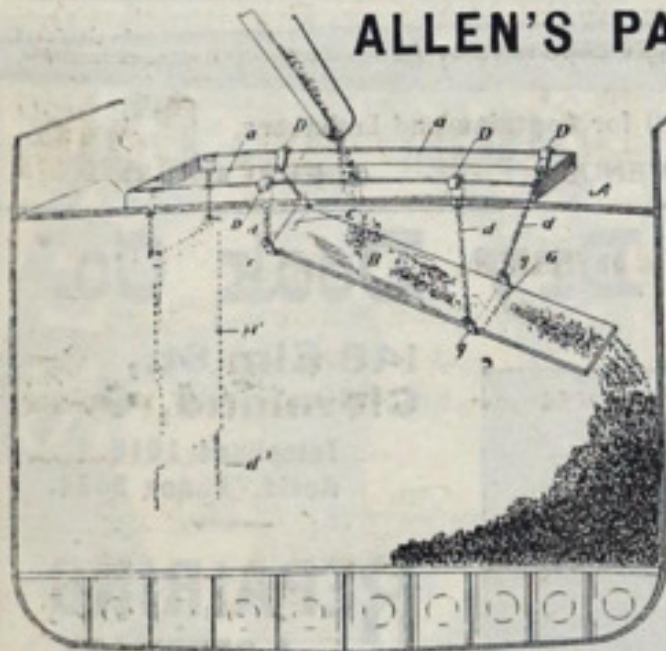
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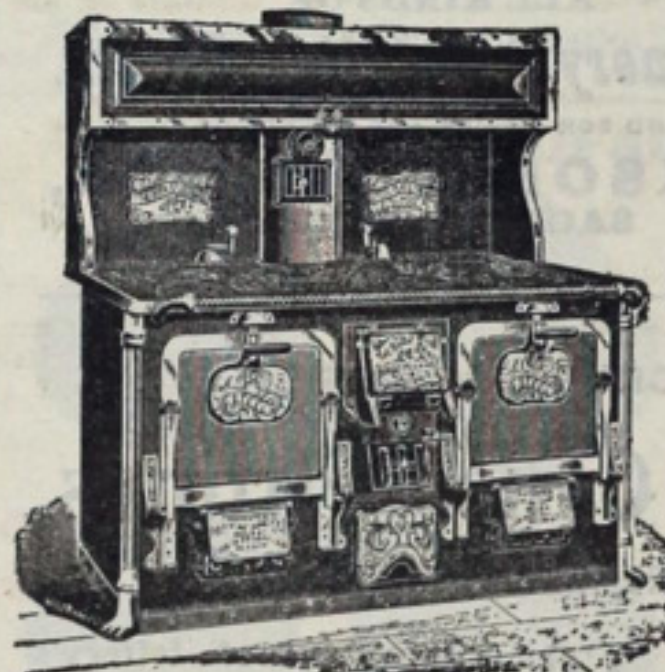
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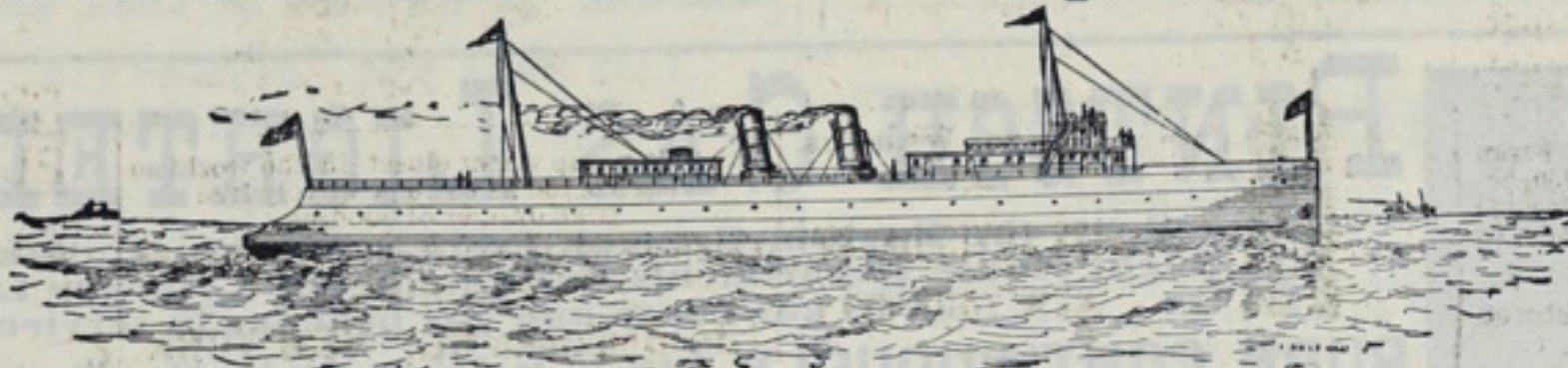
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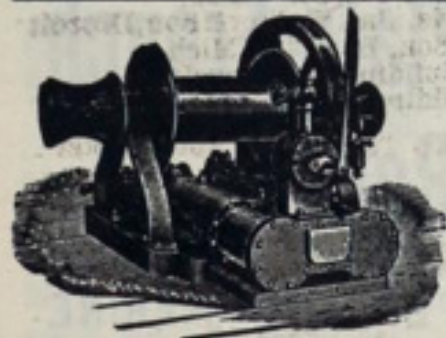
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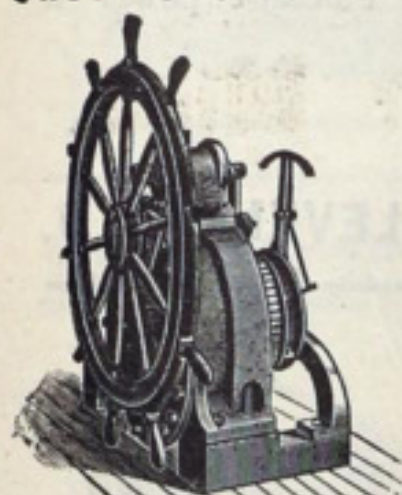
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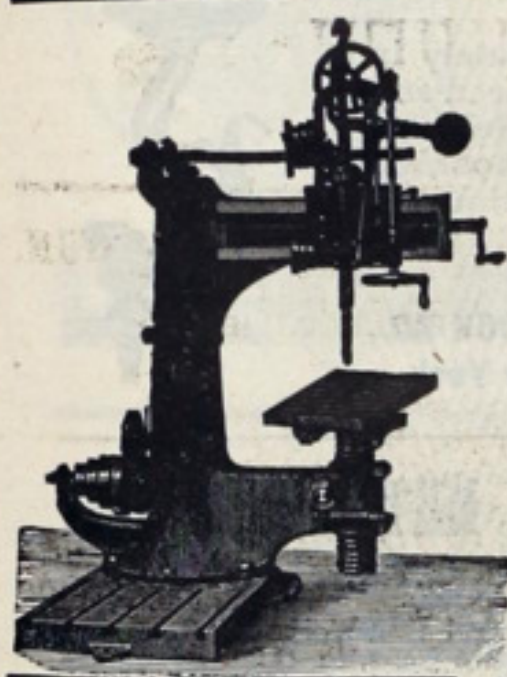
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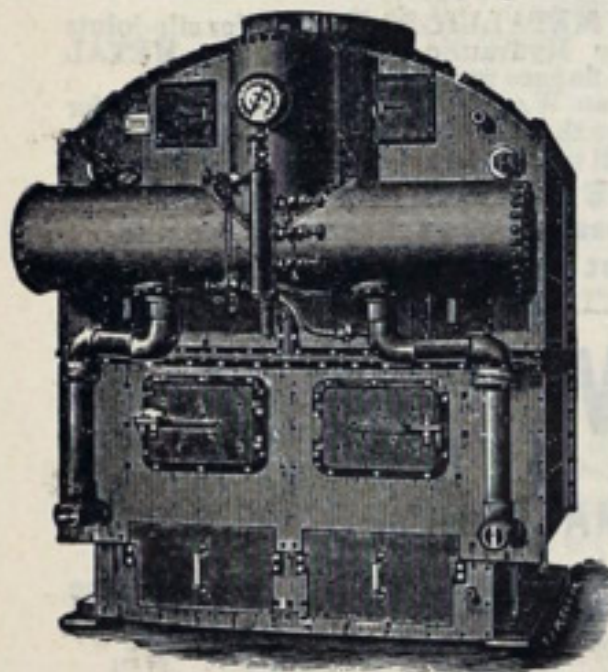
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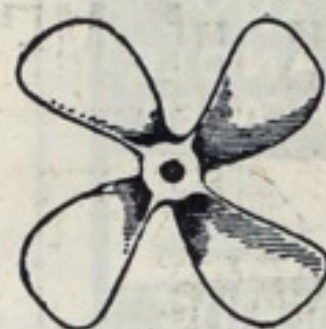
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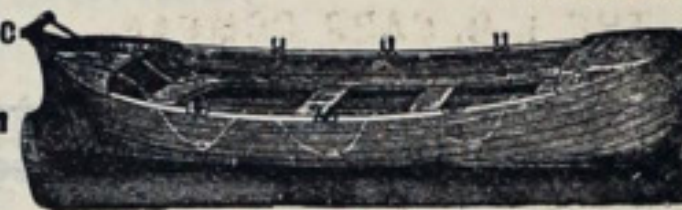
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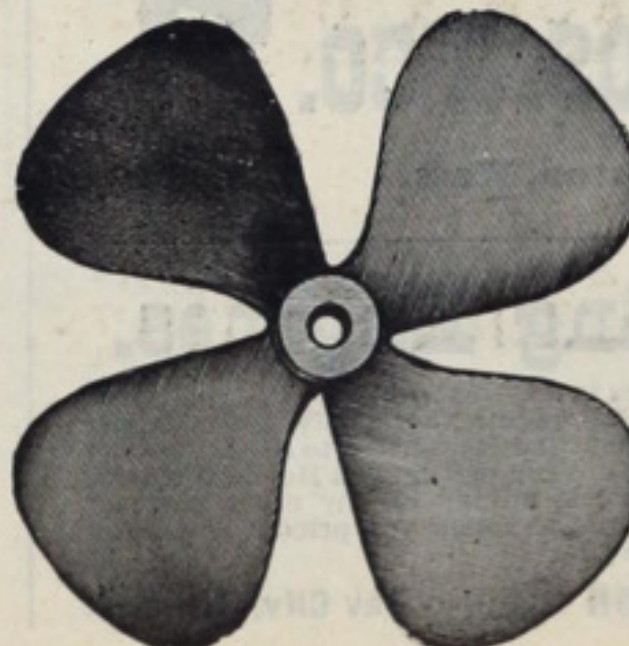
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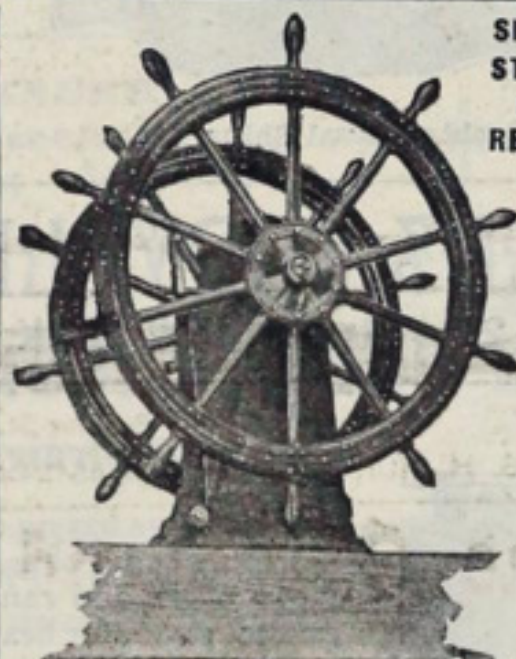
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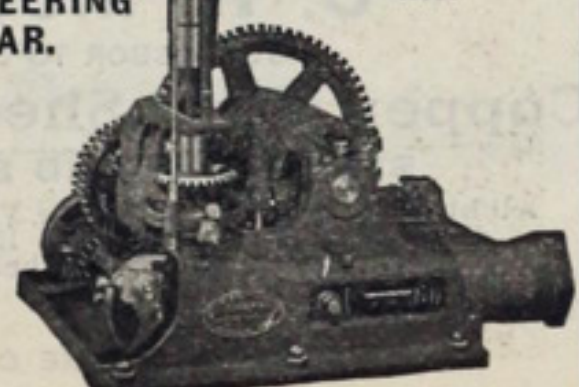
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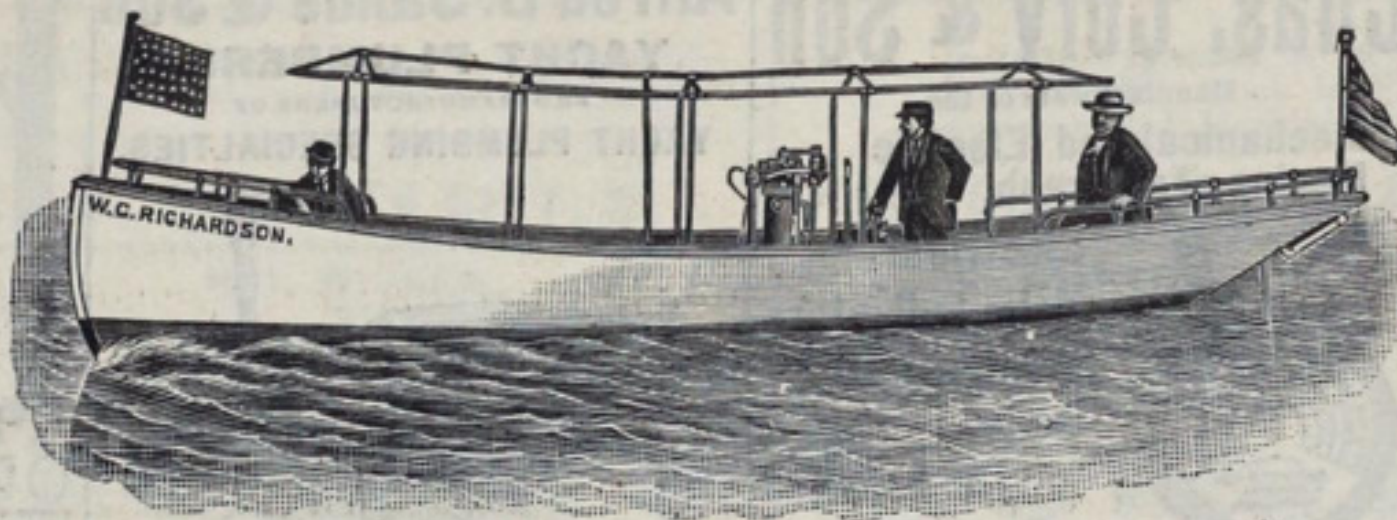
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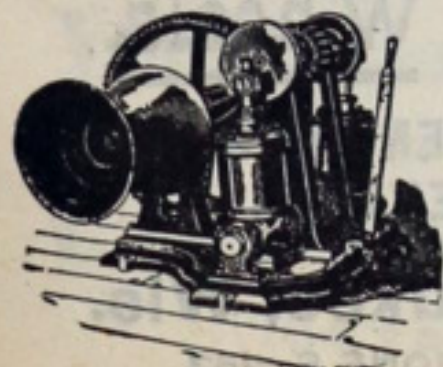
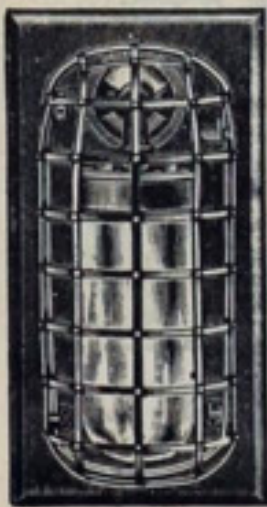
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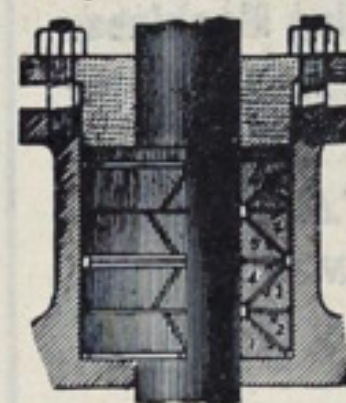
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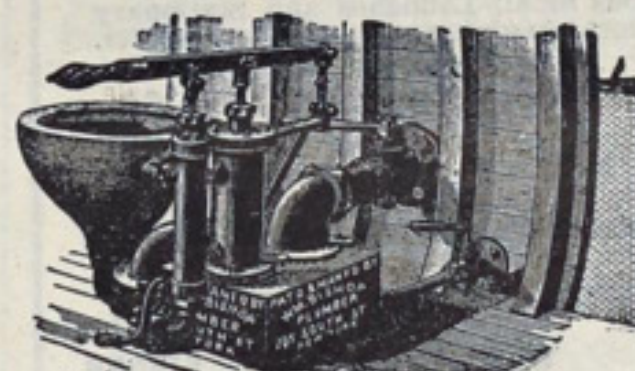
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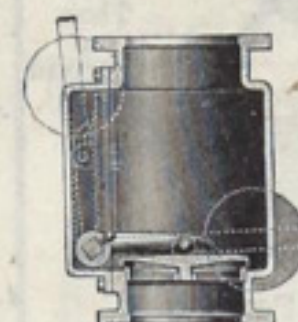
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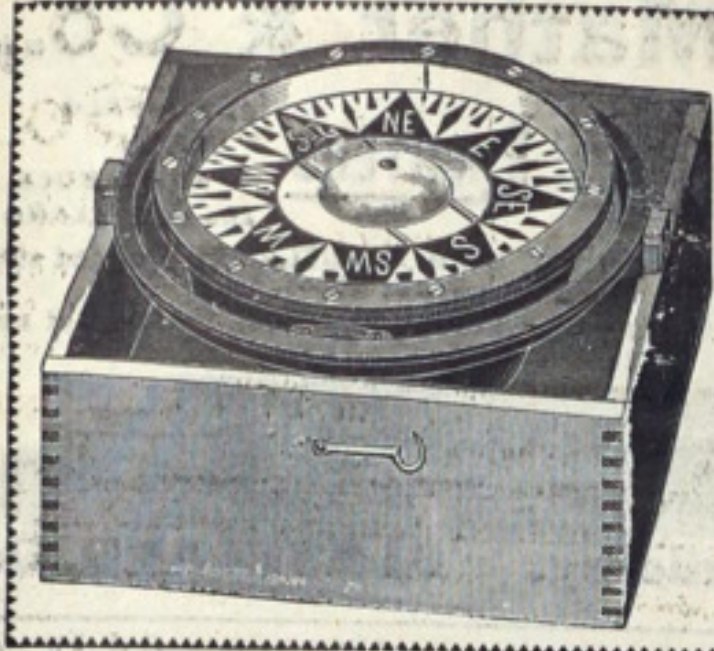
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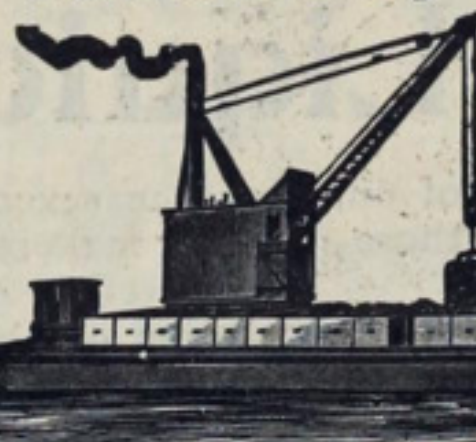
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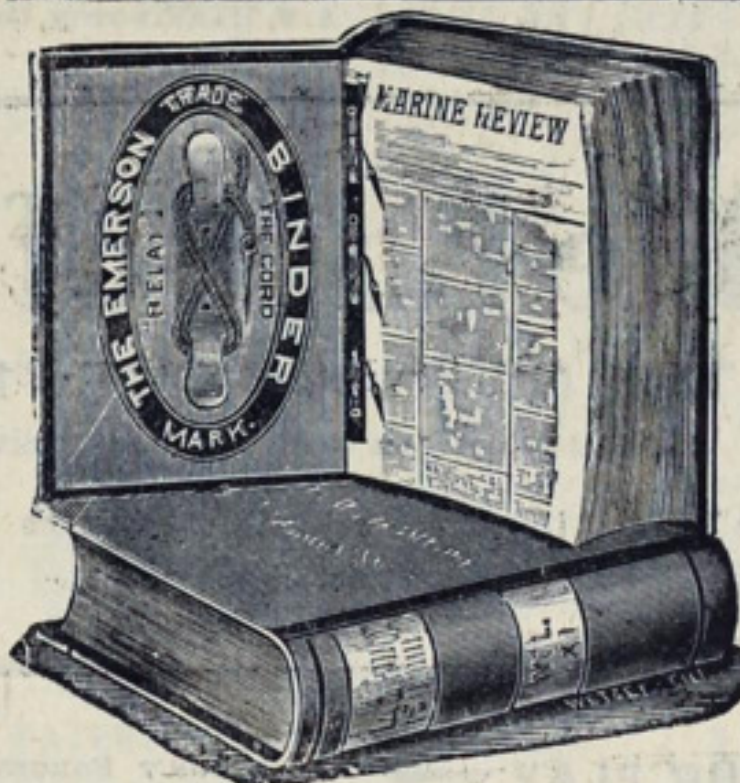
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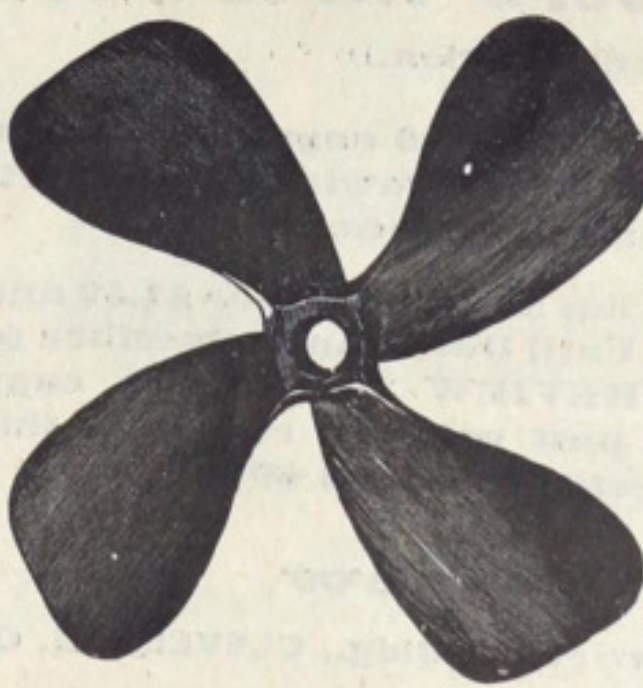
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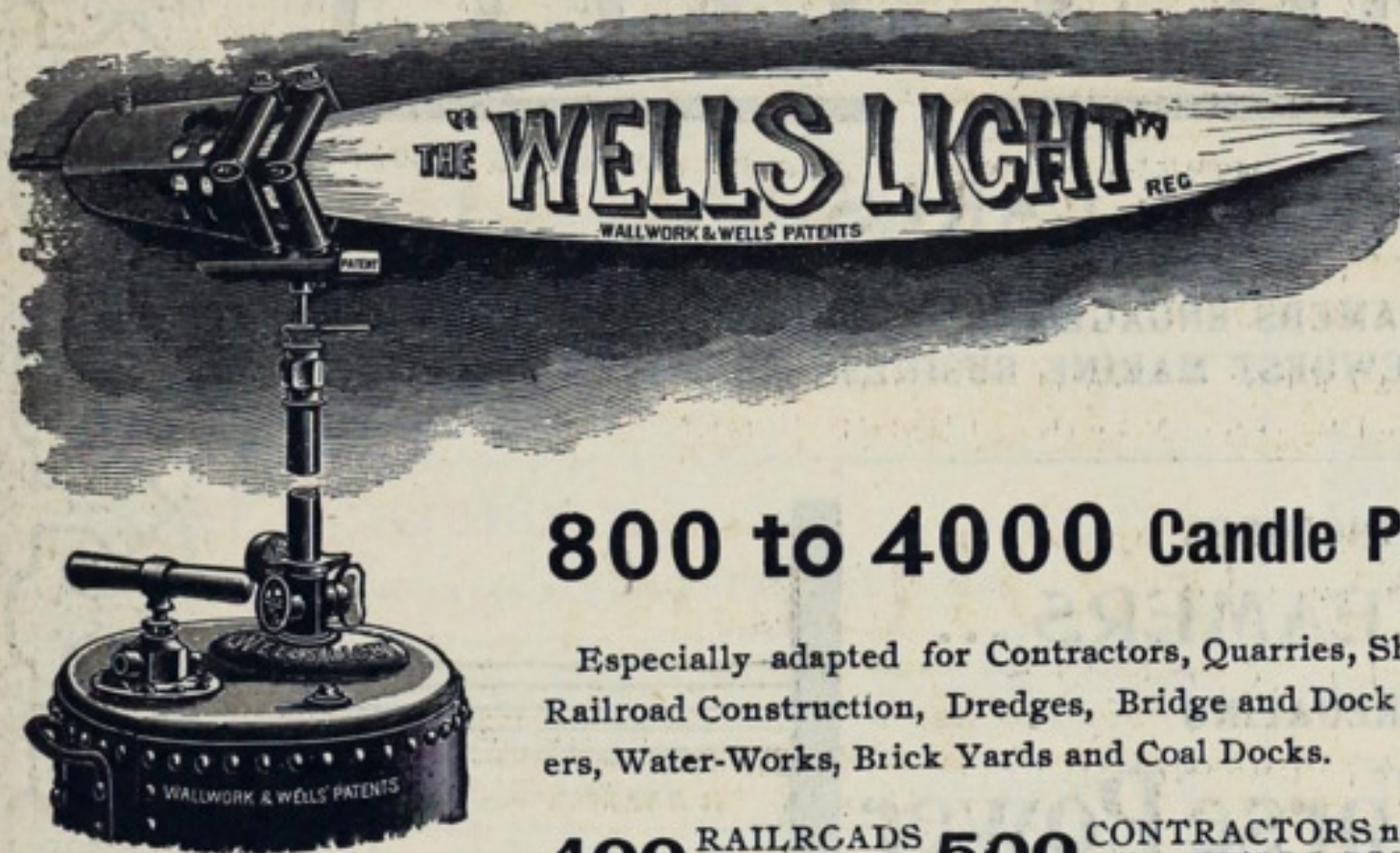
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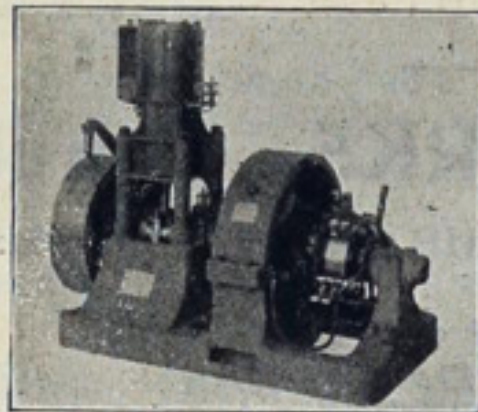
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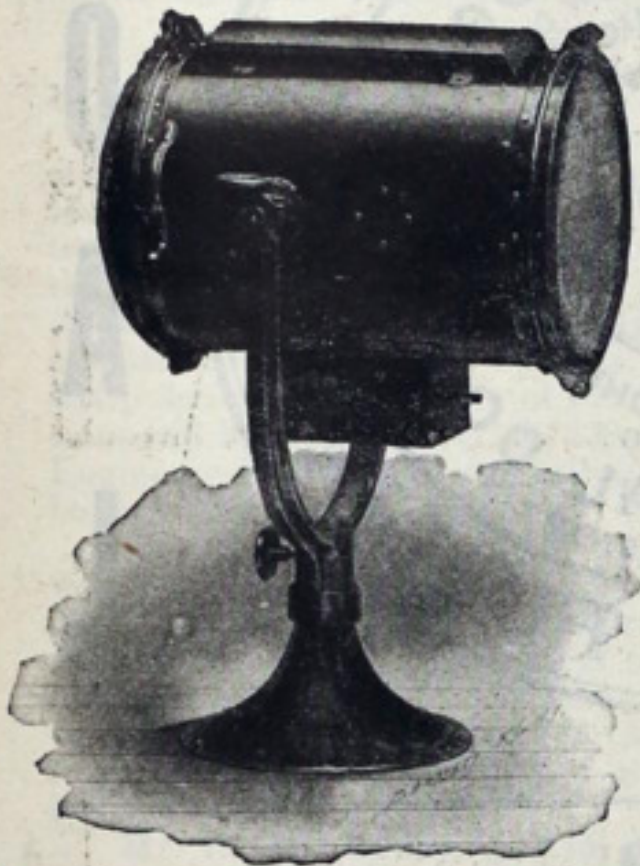
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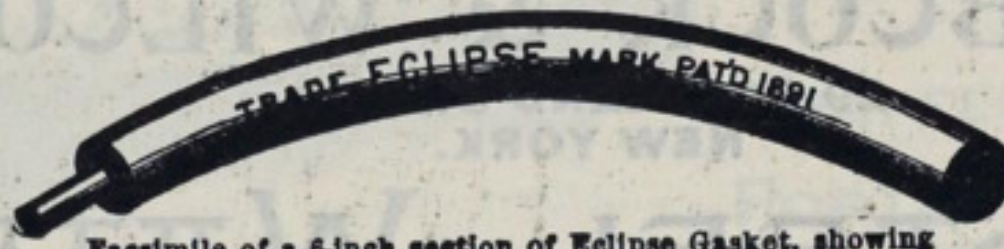
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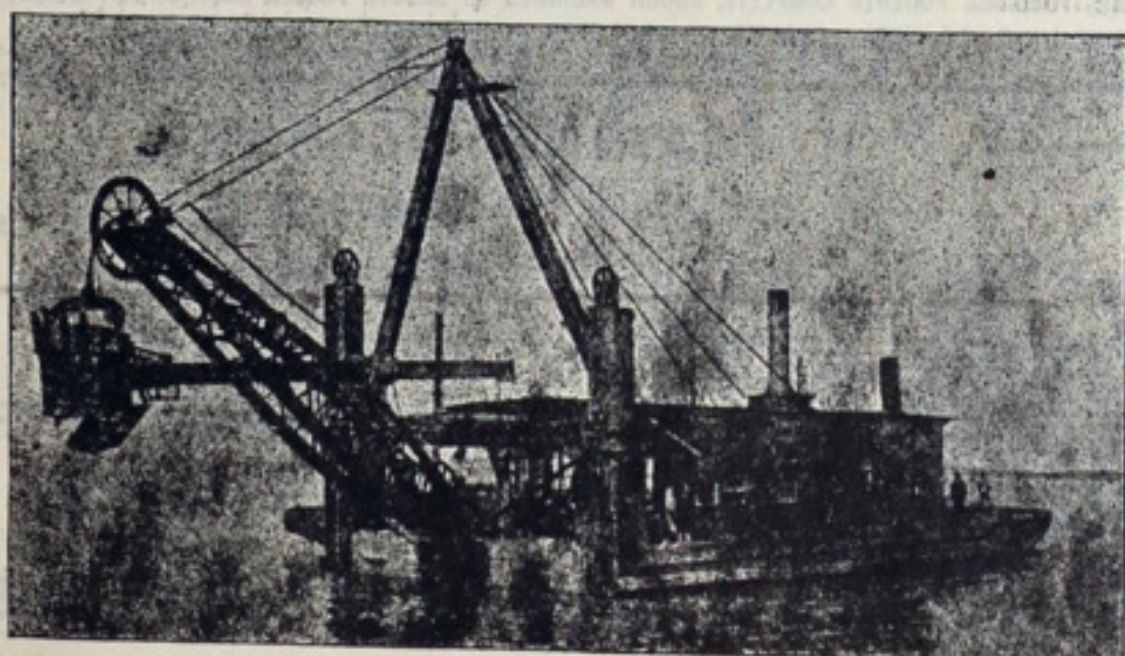
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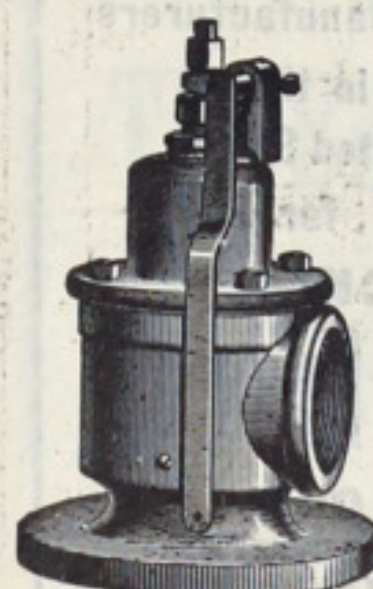
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